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4 April 1984

USSR Report

TRANSPORTATION

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4 April 1984

USSR REPORT
TRANSPORTATION

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CIVIL AVIATION

AEROFLOT'S INTERNATIONAL AIR SERVICES 1983 PERFORMANCE

Moscow VOZDUSHNYY TRANSPORT in Russian 27 Dec 83 p 3

[Article by N. Poluyanchik, general director of the Central Administration of International Air Services: "Increasing Efficiency"]

[Text] The collective of Aeroflot's Central Order of the Labor Red Banner Administration of International Air Services, having spread socialist competition to improve production efficiency and work quality, has fulfilled the targets and socialist pledges made for the third year of the 11th Five-Year Plan ahead of schedule.

Above the annual plan, 36.5 million rubles of profit were received and 46,000 passengers were transported.

Labor productivity reached 102.3 percent. The production cost of 1 ton-kilometer under the plan was reduced by 7.5 percent.

Positive results were achieved in passenger services; 88.4 percent of the flight schedules were met on time in 1983.

Flight routes were extended further. At present, Aeroflot aircraft conduct scheduled flights to 95 countries. Il-86, Il-76T and Tu-154S aircraft are being introduced on world airways more and more extensively.

The labor and political activity of aviation workers has been increased in the course of socialist competition. During the period of so-called "sanctions" by the U.S. Administration against Aeroflot, the collective displayed a high degree of organization and civic maturity, and hastened the failure of Washington's provocative actions by its worthy work.

Creative work was developed further. More than 700 inventions and rationalization proposals were introduced into production with an expected economic gain of 2 million rubles.

The program of housing construction and improvement in work conditions was carried out successfully in 1983. The plan for 3 years of the five-year plan was fulfilled in accordance with all basic indicators by 15 December 1983.

At present, collectives are discussing work results and the plan for socialist pledges for 1984, and proposals are being gathered and reserves for further improving efficiency and quality are being brought to light.

The collective of the aviation enterprise will apply all its efforts, knowledge and experience to mark the coming year of 1984 with new labor accomplishments and to make its contribution to transform Aeroflot into the standard for transportation.

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CIVIL AVIATION

OPENING OF EXPANDED FACILITIES AT ARKHANGELSK AIRPORT

Moscow VOZDUSHNYY TRANSPORT in Russian 28 Jan 84 p 1

[Text] The new air terminal complex in Arkhangelsk--Talagi--hospitably opened its doors wide to northern residents in the days after its renovation.

The runway was practically rebuilt from the bottom up, and modern landing equipment makes it possible to accommodate aircraft even in poor weather conditions. Arkhangelsk now is linked by air routes with nearly 80 cities and populated areas of the country.

An automated passenger information system, modern registration counters, a mechanized baggage handling line--all this has made it possible to increase the terminal's capacity by 100 persons hourly.

The waiting room is comfortable. It was expanded significantly by moving the newspaper, souvenir and other stands to a facility nearby. The interior of the passenger pavilion has been spruced up--the ceiling has been finished with anodized aluminum, different types of wood have been widely used, the new upholstered sofas are comfortable, and fans have been installed. To serve the passengers a cafe, a room for mothers and children, and all the necessary service for air travelers are available.

Renovation of the airport is a significant event for northern residents. After all, there is no broad network of railroads here, and communication with many large industrial enterprises, construction projects and timber managements is basically by air. Developing the resources of the North is impossible in our time without the use of aviation. Renovation of the airport will make it possible to do this more intensively.

The acceptance commission which received this project from the builders gave it an "excellent" evaluation. But of course, the passengers' evaluation is much more important. But this will also depend on the aviation workers. They are devoting all their efforts, striving to achieve a high standard of service to travelers, on-schedule flights and flight safety.

In Arkhangelsk's 400th year, the new air terminal complex is a good present for the city.

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CIVIL AVIATION

ALMA-ATA AIRPORT UPGRADED FOR IL-86 SERVICE

Moscow VOZDUSHNYY TRANSPORT in Russian 28 Jan 84 p 2

[Text] Aviators of the airport of Alma-Ata, the capital of Kazakhstan, have begun extensive preparatory work to inaugurate service by the Il-86 passenger airliner, the flagship of Aeroflot. We asked V. Segedin, deputy chief engineer of the Administration of Civil Aviation, how this work is proceeding at one of the country's largest airports.

"We have been allocated 2.2 million rubles for renovation of the airport, the terminal, the air maintenance base and production sectors of other services," V. Segedin said. "At the same time, very short periods of time are being given to us. The Il-86 should begin flights over Kazakhstan by the first half of next year."

It should be noted that specific and energetic work to prepare for operation of the new aircraft has begun in all services of the administration at the Alma-Ata airport. For example, reconstruction to expand all existing taxiways has already been completed. Specialists of "Kazaeroprojekt" are finishing preparation of documentation for the construction of four parking areas for the Il-86 and for strengthening the ramp. Over 800,000 rubles have to be utilized just to complete these operations.

A great deal has to be renovated in the terminal. This is because loading of passengers' baggage on the new aircraft will be performed with the aid of containers of impressive dimensions. So a special facility for this purpose and an area for baggage delivery will have to be built.

Now, very likely, the air maintenance base specialists have begun working most actively.

"Nevertheless, what is most important in our preparatory work," notes V. Segedin, "is the training of specialists. More than 40 engineers and technicians already have received authorization to service the Il-86 airliner. Several aircrews have had the same training."

8936
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MOTOR VEHICLES AND HIGHWAYS

'DINAMO' PLANT DEVELOPING NEW ELECTRIC MOTOR FOR BELAZ TRUCKS

Moscow MOSKOVSKAYA PRAVDA in Russian 29 Oct 83 p 3

Article: "Motor on the Wheel"

Text Specialists at the "Dinamo" plant have begun creating an electric motor for the new-design mighty BelAZ/vehicle made by the Belorussian Motor Vehicle Plant.

The machine is the size of a house. There is nothing like it in size. The wheels are even higher than the height of a person. You do not sit in the cab right away--it is too high for this. First you must go on a ladder resembling a gangway. Some 180 tons of freight can go into its body--as many as several dozen trucks can transport at one time. The new BelAZ, the most powerful future graduate of the Soviet motor vehicle construction industry, is rightly called a Hercules, a giant machine, a strongman. It can quickly service mines, pits, quarries--those working places where means of transportation with increased carrying capacity are required.

The strength of the new BelAZ's lies not only in their efficiency of design: it is derived from a dumptruck with powerful engines. Special motors are also required for such a giant. The plant "Dinamo" specialists are among the many labor collectives which have given this heroic machine a start in life. Engines of gigantic force have been born at the shops of this enterprise. They weigh about 300 kg and each has the power of 600 kilowatts.

In an ordinary vehicle the engine makes the wheels spin by a complex system of gears, the universal joint shaft, and axle shafts. In the BelAZ, the diesel generator transmits electric power through cables directly to the wheels on which electric motors are mounted. The result is that the work of the driver has become easier--the vehicle moves easily, is simple to handle, and is highly mobile. This is very important when you consider the operating conditions of such giants on the complicated quarry routes.

This is not the first time that the Belorussian motor vehicle builders have produced vehicles which have received the title of strongman. The MAZ/vehicle made by the Minsk Motor Vehicle Plant/525--a 25-tonner--was their first-born. The first BelAZ replaced it at the beginning of the nineteen sixties. The carrying capacity of each new model nearly doubled the capability of its

predecessor--a 40-ton vehicle was followed by a 75-tonner. Then a new bound-
ary arrived--120 tons. The strongman is now capable of carrying 180 tons at
one time. Muscovites also became co-authors of the new giant. Electric mo-
tors with the Moscow brand have successfully passed their tests. The work
tempo is picking up at the special section created at "Dinamo" for the assem-
bly of the powerful motors.

Another complicated task has now been placed before the electric motor vehicle
builders. They have to produce an electric motor for the new BelAZ's which
will have an even greater carrying capacity. The giant dump trucks are set
to break their own records.

8524
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MOTOR VEHICLES AND HIGHWAYS

ELECTRICALLY POWERED VEHICLES USED IN MOSCOW

Moscow IZVESTIYA in Russian 17 Oct 83 p 1

Article by V. Popov: "Electric Motor Vehicle-Taxi"

Text The first RAFY vehicle made by the Riga Bus Plant electrically-powered vehicles have arrived on Moscow streets as taxis. They have begun carrying passengers on route 37: from Preobrazhenskaya Square to the department store on Otkrytoye Highway.

This is only one of the latest strokes which paint a picture of the development of electric motor vehicle transportation in the capital. In EPEKh Electric Motor Vehicle Research and Production Department organized in Glavmosavtotrans Main Administration of Motor Vehicle Transportation of the Mosgorispolkom there are about 50 electrically-powered vehicles now in test operation. These are vehicles modeled after the UAZ Ul'yanovsk Motor Vehicle Plant, erAZ Yerevan Motor Vehicle Plant, and RAF motor vehicles. They serve enterprises of trade, public eating facilities and children's institutions--they transport various kinds of freight. Electrically-powered vehicles have carried more than 5,000 tons of freight in two and a half years. The total mileage of these vehicles has been around 150,000 km.

In the morning Sergey Myagkov loaded his van with 500 kg of quick-frozen potatoes which he must deliver to a cafe near the Izmaylovskiy Park metro station. I asked to travel along with him.

It was unusually quiet in the cab. Going out onto Shchelkovskoye Highway, Sergey stepped on the gas and the vehicle easily surged forward.

"This is the fifth year now that I have been operating an electrically-powered vehicle," Myagkov says. "The speed is fully adequate--under 70. No more is needed in the city. The vehicle is easy to operate. This is now an important factor in safe driving when the traffic becomes all complicated."

We asked the deputy director of NIIGlavmosavtotrans Scientific Research Institute of Glavmosavtotrans, Doctor of Technical Sciences V. Shuplyakov, to discuss in more detail the operation of electrically-powered vehicles in Moscow.

"In a large modern city," he says, "where the problem of a clean environment is becoming more acute each year, the electrically-powered vehicle is the most promising means of transportation. It can easily compete with the standard motor vehicle in transporting small-tonnage cargo and in providing various everyday services to the population. The electrically-powered vehicle is considerably simpler to service and repair. For example, it requires 8-10 times less oil than a regular motor vehicle."

The experimental electrically-powered motor vehicle industry, jointly with enterprises of the Ministries of the Motor Vehicle Industry and the Electrical Engineering Industry, is carrying out a large amount of research work aimed at creating future vehicle designs with improved specifications which will give these vehicles a fuel distance of 100-150 km.

Glavmosavtotrans is planning to construct a large electrically-powered vehicle production building with a network of garage bays and special equipment for servicing the vehicles. The fleet of electrically-powered vehicles will be increased to 250-300 units. Ten charging stations (gasoline-pump type) for the electrical "refueling" of vehicles will appear in various areas of Moscow.

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MOTOR VEHICLES AND HIGHWAYS

NEW ZIL-4331 DIESEL TRUCK TESTING COMPLETED

Moscow IZVESTIYA in Russian 12 Nov 83 p 3

Text The promising new experimental ZIL/Plant imeni Likhachev/-4331 four-wheeled truck tractor with a ZIL-645 diesel engine (the horsepower of its basic version is 185) has been developed, built, and has passed thorough tests at the Moscow Motor Vehicle Plant imeni I. A. Likhachev of the ZIL production association.

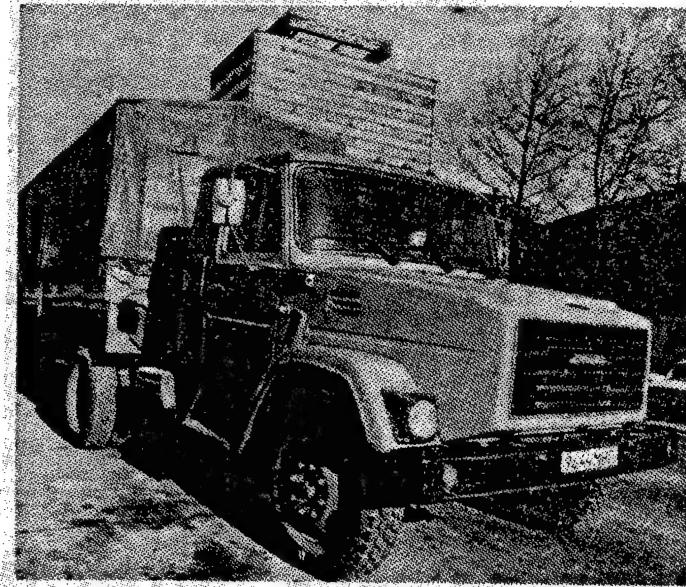


Fig. 1. New ZIL-4331 Truck Tractor

The carrying capacity of the trailer truck with the new tractor has been increased to 14 tons (trailer trucks with the ZIL-130 series tractor have a carrying capacity of 11 tons). Its maximum travel speed with freight is 85 km an hour.

The ZIL association collective has to switch to the production of the ZIL-4331 tractor in the 12th Five-Year Plan.

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RAIL SYSTEMS

RAILWAYS DEPUTY MINISTER ON IMPROVING FOODSTUFFS TRANSPORT

Moscow SEL'SKAYA ZHIZN' in Russian 12 Nov 83 p 2

[Interview with V. N. Gin'ko, USSR first deputy minister of railways, by O. Tatevosyan, special correspondent of SEL'SKAYA ZHIZN': "From the Field to the Rail Car, and Then to the Granary--Answers to Readers' Questions"; date and place not specified]

[Text] The importance of railroad transport for hauling harvested crops is a matter of common knowledge. Naturally, everyone who is involved in rural life, who is not indifferent to the fate of everything grown in the fields, wants to know what has been done and what is being done to improve the hauls of agricultural produce as well as to ensure its preservation.

A. IVANOV
Moscow Oblast

At the request of SEL'SKAYA ZHIZN' special correspondent O. Tatevosyan, V. N. Gin'ko, USSR first deputy minister of railways, answers these questions here below.

"The universal interest in our work is understandable," Vladimir Nikolayevich stated. "And, because we are constantly aware of public attention, we are striving to restore health to the situation on the steel mainlines. The plan assignments for delivering rail cars loaded with agricultural produce, which, by the way, are now substantially higher in comparison with past years, are being overlapped. During the past nine months alone more than a million tons of grain items more than the state plan have been hauled. Only during last month did a modest lag behind the assigned tasks arise: in October the daily amount of grain shipped was short by about 150 cars. But hauls of potatoes, fruit, and vegetables, along with many other types of agricultural produce, noticeably outstripped the state assignments.

"This, of course, does not mean that the transport needs of the rural areas are being satisfied fully and on schedule. During these same October days, for example, the Volga Railroad, for example, loaded only 350 cars with grain instead of the 520 provided for in the plan. There it was a case of poor preparation for the harvest time on the part of the car-repair people, the dispatching unit did not work with sufficient enthusiasm, and the mainline administration failed to exhibit high enough standards. The analysis carried out

by the staff of the sector demonstrated that quite a few complaints should also be presented against the Kuybyshev, West Kazakhstan, and Tselin Railroads."

Question Vladimir Nikolayevich, our readers are interested in how these bottlenecks come about. Why is it that even with round-the-clock planning and a scientifically well-grounded haulage technology there still arise situations where cars are needed in one place, while there is a surplus of them thousands of kilometers away?

Answer There are several factors in operation here. And the railroad workers are far from being to blame in all of them. But let's first discuss situations where the blame of the transport workers is without doubt. In October the Moscow, Gorkiy, Southeastern, and a number of other railroads substantially overfulfilled their assigned tasks with regard to loading agricultural produce to be sent to stations within the areas covered by these railroads themselves. But then the shipping out of produce beyond the bounds of the mainlines turned out to be lower than the level of the plan assignments. Why does this happen? The railroad administrations strive to retain in their own areas rolling stock --for the most part, grain-carrying freight cars--which is in short supply during the high point of the harvest period. They are indulged in this by the local procurement organs. Such a practice disrupts the general network plan for distributing loading resources throughout the railroads. But, of course, there are sufficient causes for disruptions even without this. In certain places they have counted on the harvest ripening by such and such a time, but nature decreed otherwise. Certain persons have not been able to adhere to the schedule which was drawn up earlier for harvesting the crop and transporting it to the cars. Last month our rural clients daily refused from 400 to 500 cars which, in accordance with the plan, were supposed to deliver loads throughout the entire network. And, of course, something different happened: the freight goods were ready, they exceeded the plan several-fold, but we were not capable of delivering empty cars. You will agree that if we had accumulated cars somewhere near Kiev, refused at a given time by our clients, they can... in no way be in the Southern Urals, where they are being waited for with impatience.

Question Perhaps, taking into consideration the specifics of agricultural production and particularly the operation planning of the railroad sector, 400--500 cars on a nationwide scale is really not such a large figure?

Answer I do not agree. Every sector of the national economy has its own specifics. The gist of the matter really lies in something else: in the inability to genuinely take into account the transport factor, if you will--in the non-understanding of transport's role and importance in the economic life of the country.

Take the unloading of these same agricultural goods. This year, to be sure, the situation has improved somewhat, but it is still far from the norm. Every day thousands of cars remain unloaded until the following day, even though all the normative deadlines for their processing have already expired on the previous evening. And, of course, according to the plan, these cars should be already proceeding on their way today, fully loaded. If they are not unloaded on time, then the assigned pace of hauls cannot be sustained.

At times matters reach a curious state of affairs. In accordance with the existing standardized plan for grain elevators, they have installed an unloading complex capable of accepting 200 tons of grain per hour, that is, three car-loads. It is not difficult to compute that to unload a mainline train sent to such a standard elevator requires at least 24 hours. That is, the entire effect gained from mainlining, the entire savings in time obtained by the accelerated movement of such a train comes to naught.

It is commonly known what a short supply there is today of isothermic cars. The Ministry of Railways exercises constant monitoring controls over them; it traces their speeded-up movement and has established a priority for trains made up of refrigerator sections: they must be dispatched throughout the entire network after passenger trains. In the Food Program approved by the May (1982) Plenum of the CPSU Central Committee provision has been made to increase the pool of such rolling stock by 29,000--30,000 units before the end of the current decade. But how are these cars being utilized today? Here and there we come across instances of isothermic sections standing idle for days and weeks while waiting to be unloaded. Often they clog the tracks at adjoining stations and hamper switching operations; because of this they are shunted from one place to another.

Question/ Can it really be true that the railroad people have no economic, administrative, or any other levers to influence such partners?

Answer/ You have fines in mind? Unfortunately, the system of fines is imperfect. The freight consignee automatically relegates the amount of the fine to the schedule of the "transport expenses," and the railroaders transfer these sums to the state budget. Furthermore, you cannot build a rail car out of fines. In certain cases, moreover, fine-type sanctions are not even applied. Let's take, for example, the case of the standard grain elevator which takes an entire day to unload a mainline train; no sort of fine is imposed. In accordance with the USSR Railroad Charter, the norms for idle times for freight operations are established by proceeding from the actual degree of technical equipment of the freight consignees and shippers. If everything corresponds to the standard plan, and the norm for processing a car is derived from this plan, then what can be asked of the freight consignee? He has one unloading "point"--and so he should be responsible for fulfilling the norm established per car. If from 50 to 60 cars arrive, then multiply the norm by this number. That's how an entire day or more of idle time is obtained.

Another trouble lies in the fact that the freight consignee himself is not always motivated to retool his own transport workshop. Then, of course, we must revise the time periods allowed for idle times, taking into account the new potentials, strictly in accordance with the Charter. That is why some negligent managers avoid extra responsibility, and we lose genuine capacities of the hauling conveyor; already in the planning stage for the upcoming month we have been compelled to turn down some requisition orders from clients.

Question/ I have been told in the ministry's main administrations that, in the case of some requisition orders, so to speak, the circumstances themselves dictate a refusal. The story of straw is particularly astounding. It turns out that Georgia ships it in from the Baltic and Volga areas, while the North

Caucasus delivers it to Murmansk, Rostov Oblast, and some other places in a northerly direction.

[Answer] This fact reflects one of our main troubles connected with servicing agriculture. If it were only a matter of inefficient hauls of straw! But at the high point of every harvest time we haul millions of tons of sugar beets over distances of 10--20 kilometers. Moreover, the produce is initially delivered to the sugar beet center in trucks; then it is transferred to rail cars, the idle times of which during loading and unloading amount to more than the time period during which these same trucks could have hauled such goods to their point of final destination.

[Question] But who benefits by this?

[Answer] The local administrative organs have an oblast limit on fuel and lubricating materials, rather than an All-Union limit, as is the case with the Ministry of Railways. And so it turns out that it is advantageous to them to spend more time on a haul, to suffer losses on reloading and transshipments but to economize on gasoline.... And the fact that general-purpose cars, furthermore, the kind of rolling stock--gondola cars--which is in the shortest supply, are remaining idle is of little concern to them.

In general, it must be said that in the matter of improving the efficiency of hauling agricultural goods a great many problems have piled up. For example, every year we haul millions of tons of grain from the Volga region, the Southern Urals, Northern Caucasus, and Kazakhstan to our country's European Central Region, while rolling to meet this stream are cars loaded with flour. It is obvious that we must deploy the enterprises of the flour-milling industry more rationally and better specialize the already-existing ones. The hauls coming to meet them are frequently made up at the planning stage of delivering products of the fields and farms. Now at the beginning of the summer, for example, it was proposed that we haul tomatoes from Moldavia to the Urals and to Siberia, and during these very same days--from Central Asia and Astrakhan to the Central Region and the Northwest. And, of course, it would be more correct to send tomatoes from Moldavia to Moscow, Leningrad, Belorussia, and the Baltic area, while they should be sent from the lower reaches of the Volga and from the East to the Urals and to the cities of Siberia. The same kind of situation holds true in planning the deliveries of onions, potatoes, cabbage, as well as a number of other products of fields and farms.

The country's railroad transport annually hauls enormous amounts of foodstuffs. Experience of the present year has demonstrated that the needs of the national economy for these hauls can be fulfilled. Of course, we also have had to make many revisions in organizing matters on the railroads. Dozens of trains consisting of refrigerated sections have been introduced; they make their runs with practically the same speed as the passenger trains. Certain express trains have been permitted to attach individual insulated cars loaded with highly perishable goods. With passenger traffic beginning to decline and with the elimination of a number of summer trains, freight trains loaded with vegetables and fruit for the country's major industrial centers have been allowed through on their schedules.

But we must also look to tomorrow. Specialists are coming to the conclusion that, for the volume of hauls being carried out today by the USSR's railroad transport, there is a shortage of approximately 40,000 kilometers of mainlines in addition to the 143,000 which we already have. Naturally, such a network cannot be built all at one time. All the more so are we convinced of the following: many of today's hauls ought to be immediately eliminated in the over-all interests of the national economy.

2384
CSO: 1829/137

RAIL SYSTEMS

MINISTRY REMAINS CONCERNED ABOUT OCTOBER RAILROAD OPERATIONS

Moscow GUDOK in Russian 17 Dec 83 p 3

[Article by V. Yurasov, GUDOK correspondent: "Improve the Operation of the October Mainline"]

[Text] A few days ago Minister of Railways N. S. Konarev, along with the leading officials of a number of main offices and administrations, met with the commanders of the October Railroad. During the course of the conversation the attention of the mainline's leadership was drawn to the large surplus in the rail-car pool, to the necessity at the end of the year to intensify the shipping out of appatite concentrate and mineral fertilizers, as well as the output of the Kondopozhskiy Pulp-and-Paper and the Kostomukshskiy Mining-and-Dressing Combines. Emphasis was placed on the importance of the universal development of labor cooperation among transport workers in the Leningrad and other junctions of the railroad.

Questions were examined in connection with further developing this mainline's material and technical base. It was proposed that the railroad's leading officials carefully and thoroughly analyze the program for eliminating bottlenecks in the mainline's activity and adopt energetic measures to improve the utilization of capital investments.

On 14 December at the Smol'nyy Building, jointly with the supervisors of the party and Soviet organs of Leningrad and the oblast, the prospects were examined for developing the material and technical base of the October Railroad and the Leningrad Junction in order to reliably provide for the needs of the region's enterprises and population for hauls. A program was outlined for improving the work of the Leningrad Railroad Junction and the October Mainline, as well as for improving the working and everyday living conditions of the railroad workers.

On that same day N. S. Konarev visited the Leningrad-Moscow Commercial Station and the locomotive depot of the Leningrad-Moscow Passenger Station. At the meeting with the management and workers of the Leningrad-Moscow Division the minister set the following task: during the next few months to guarantee the technical preparedness of the main course of the Moscow-Leningrad Mainline for the regular running of high-speed passenger trains.

N. S. Konarev spoke in the Lenin Auditorium before the instructors and students of the LIIZhT [Leningrad Institute of Railroad Transport Engineers imeni Academician V. N. Obraztsov]. He talked about the most important problems confronting the railroad workers now, he emphasized that the transportation experts must make a substantial contribution to their solution, and he dwelt on the questions of improving the quality of training engineering personnel.

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CSO: 1829/136

RAIL SYSTEMS

DNEPR RR CHIEF ON NEED FOR RAILROAD-ENTERPRISE COORDINATION

Kiev PRAVDA UKRAINY in Russian 15 Nov 83 p 2

Article by A. Alimov, chief of the Dnepr Railroad: "Counting on Contacts--Rail Cars Should Carry Full Loads and Make Fast Runs"

Text The rail sidings which adjoin the stations of the Dnepr Railroad handle almost 86 percent of the freight turnover. This means that the over-all rhythm on the main-line depends on the level of car utilization in the railroad workshops of this region's enterprises and organizations. This is why we are paying particular attention to cooperation between the groups at the stations and workers in closely allied fields. And the main thrust here is the introduction of a standardized operational technology for railroad stations and enterprises.

In places where workers in closely allied fields labor shoulder to shoulder, where there prevails not inter-departmental dissension but rather coordination and reciprocal aid, matters always go forward on a good footing. As an example of this, let me talk about the experience of the groups at the Dneprovsk Aluminum Plant and the Zaporozh'ye-Levoye Station. Integrated shifts were set up in these groups more than 10 years ago. And they have indeed been integrated in attaining their principal goal--the fastest possible processing of rail cars.

In case of a mass approach of freight, the person on duty for the division immediately informs the shift chief of the railroad workshop about this. The latter in due course provides for the unloading and assembling of the cars which have arrived as well as the delivery of the freight to the appropriate turntables. Moreover, the plant workers are now shipping out their principal products--aluminum and silumin (a silicon-aluminum alloy) ingots--only in packets, and this significantly speeds up the loading and unloading operations.

Other problems have also been successfully solved. During the period of gathering in the harvest, for example, the plant's transport workers themselves wash the cars so that the grain can be poured into them. Following the example of the Muscovites, they were among the first to conclude an agreement for the repair of empty cars. And they have been solid in carrying out their duty. In turn, the railroad has increased the daily delivery of cars to the aluminum plant.

Thanks to the smoothly coordinated actions of both groups, the idle time of cars during a single freight operation for the first half of the present year, in comparison with the same period of last year, has been reduced by 1.9 hours, while the station has fulfilled the haulage plan by 101.3 percent. Just such as high indicators were reached by the Dnepropetrovsk-Gruzovoy Station and the Dneproshina Association, the Dnevka Station and the Dnepropetrovsk Coking and Chemical Plant imeni Kalinin, the Chertomlyk Station and the Ordzhonikidzevsk GOK [Mining and Dressing Combine], as well as many other groups operating in accordance with the principle of integrated technology.

Coordination in the work has also been facilitated by an inter-sectorial socialist competition among workers in closely allied fields.

In addition to this, about two years ago upon the railroad's initiative, a labor contest among the transport workshops was unleashed for the effective utilization of the rolling stock. It is characterized by the fact that the bonuses to the winners are paid out of the railroad's material-incentives fund.

We attentively keep track of everything new and with good prospects which manifests itself in the practice of the reciprocal activities of the workers in closely allied fields. Practically all the most important innovations which have appeared recently have been introduced on this mainline. The experience of the Leningrad, Chelyabinsk, and Moscow transport workers is being effectively utilized. The comprehensive system for effective car utilization, as proposed by the Lvov workers, is continuing to be introduced.

We have quite a few initiatives of our own, approved by the Minsitry of Railways and the Central Committee of the sectorial trade union. Thus, a number of stations and enterprises have resolved to labor under the motto: "A collective guarantee of increased efficiency and work quality." And the groups at the Mudrenaya Station and Railroad Workshop No 6 of the Krivbassrud Association have come out with the following innovation: "Utilize every car in a business-like manner." During the first half-year the idle time of cars in a single freight operation was reduced here by 1 hour, while approximately an additional 3,000 cars were freed up.

But, unfortunately, another kind of figures can also be cited. During the present year about two-thirds of the industrial enterprises have not coped with the norms for the idle time of cars.

The main reason for this, in our opinion, lies in the fact that at many enterprises not enough attention is accorded to developing transport management. Here is a specific example. At the Zaporozh'ye Coking and Chemical Plant a radical reconstruction of the main workshops was carried through not so long ago. But the situation with regard to unloading cars not only did not improve but even became worse, since, in building the coking bank, a portion of the track was dismantled, unloading platforms were shortened on the trestle and at the coal-storage facility. As a result, the plant's unloading capacity was reduced.

The enterprise is in extreme need of a second car dumper and an additional garage for thawing out coal; it is high time to replace obsolete locomotives and

modernize the locomotive depot. But so far nothing has succeeded in moving these matters off ground zero.

There are analogous situations at the Metallurgical Plant imeni Dzerzhinskiy, at the Krivoy Rog Cement Plant, the Zaporozh'ye Kommunar' Plant, and others.

Not all our workers in closely allied fields have yet willingly responded to initiatives which have received widespread recognition. In particular, a number of enterprises have not concluded agreements on car repair. The management of Zaporozhstal' have resisted this for a long time. But, you know, during the first half of 1983 alone 129 cars suffered damages at this plant.

Frankly speaking, the Lvov experience is still being introduced with difficulty, particularly at enterprises of ferrous metallurgy and the coal industry. Evidently the strict standards which the Lvovans' comprehensive system imposes are not to everyone's liking. The refusal to conclude an agreement on introducing this system is motivated by a lack of methodological directives on this score, directives coordinated with the appropriate ministries and with the State Board of Arbitration. But this is merely a pretext. The simple fact is that the metallurgists and coal workers are convinced of the following: no matter how circumstances take shape on the railroad, they will be assured of top priority in obtaining cars. And since this is the case--why should they be disturbed and take on extra troubles for themselves? Such a point of view hardly facilitates further improvement of the operations of the transport conveyor.

Still more about a certain urgent problem. Since 1961, in shipping out freight from the stations, we have been in contact with truckers and clients not directly but through transport-expeditionary enterprises. There are three of them on this railroad, with a proper staff of 700 persons and a appropriate wage fund. They were created for a worthy purpose--to speed up the arrival of freight at the consignees. And what resulted from this?

Let's begin with the fact that life on the railroad does not stop humming even for a minute, and the transport-expeditionary enterprises have not, up to now, been able to arrange the acceptance of freight by clients on a round-the-clock basis, as well as on days off and holidays. Hence there are many failures of coordination. For example, at the Zaporozh'ye-Gruzovoye Station there are 60--80 large-tonnage containers ready to be shipped out every day, but only 12--13 are actually shipped out. On an average, the idle times for these containers here exceed the norm by 35 hours.

The delivery of trucks with their loads is not systematically ensured in accordance with the strict regulations. Under the direct "rail car--truck" variant a considerable portion of the freight is not shipped out during a working day, and the rail cars remain for a second, and sometimes even a third or fourth day. But, in accordance with the existing statute, the transport-expeditionary enterprises bears no material responsibility for this.

In general, the transport-expeditionary enterprises are still unable, in our opinion, to take upon themselves the task of carrying out all operations with regard to servicing the freight consignees and the freight shippers. In the

inevitable conflicts which arise in such a situation they invariably side with the truckers, since they are subordinate to the oblast-level administrations of truck transport. We propose putting the TEP's /transport-expeditionary enterprises/ directly under the UKSSR Ministry of Motor Transport. But best of all would be to transfer their present functions to the railroaders. Then there would be one boss at the freight stations, and, consequently, there would be more order there. Furthermore, it would be possible without any harm to the cause whatsoever to reduce the TEP staffs by almost half, and the state would obtain considerable savings from this.

The country's railroads have a constantly great load. And in the future it will undoubtedly increase. It is very important, therefore, that our closely allied workers understand that accuracy in the transport conveyor depends on them to a large extent. Without their active aid it is difficult to handle the ever-increasing flows of freight. This is our common cause.

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RAIL SYSTEMS

CHIEF ON ALMA-ATA RAILROAD IMPROVEMENTS

Moscow GUDOK in Russian 3 Nov 83 p 2

Article by K. Kobzhasarov, chief of the Alma-Ata Railroad: "Time Dictates Pace--Experience in Modernizing the Alma-Ata Railroad"

Text The Alma-Ata Railroad serves the southern and eastern oblasts of Kazakhstan as well as Kirghizia. Passing through it is the principal flow of trains from the Urals, Siberia, and Kazakhstan to the republics of Central Asia. In recent years it has operated unevenly and has become literally an obstacle on the track of the car flow. During the autumn of last year as many as 58,000 "stalled" railroad cars were piled up in "abandoned" trains on the Alma-Ata Railroad itself and on the neighboring railroads. Serious complications arose in the work of industrial enterprises, agriculture, and the entire economy of a large region. It was necessary to decisively correct the situation. But, in order to do this, we had to establish, first of all, the causes which led to such a situation.

No, the state did not spare any means to increase the capacities, reconstruct the railroad, and modernize its maintenance. During the last few five-year plans quite a bit was done to increase the through traffic capacity. Continuous second tracks were built on the Arys'--Dzhambul--Chu and Chu--Mointy lines. Reconstruction was begun on the Chu--Alma-Ata section. Means of automation and remote control were introduced, the locomotive, car, freight, and other maintenance systems were strengthened, and the diesel-locomotive pool was renovated.

However, the state did not obtain the yield which should have accrued from all this. During the course of the work primary stress was placed on the "gross production volume." Second tracks were laid, but the stations remained undeveloped. And it is they which comprised the fundamental cause of limiting the scope of traffic. In some cases the necessary development was not provided for by the plans, while in others--and this occurred more often--the transport builders did not cope with the work volumes planned by them. Railroad workers know that the reconstruction of existing terminals is a complex, difficult matter. Success here depends, to a large degree, on the precise coordination of the actions of the builders and the users. But this did not immediately come to pass.

And so, having placed our emphasis on the comprehensive reconstruction and rapid development of the stations, we paid particular attention to universally strengthening cooperation between the users and the groups of the Kazakhtransstroy Trust, as well as the sub-divisions of its sub-contracting trusts: Transsignalstroy, Transelektromontazh, Kazakstranstekhmontazh, Kazakhtranstekhmontazh, and others. Close contact was established with the Alma-Atagiprotrans and Alma-Atazheldorproyekt Planning Institutes. These efforts of ours were supported by the Central Committee of the CP of Kazakhstan.

First of all, it was necessary to outline a precise plan of actions, to determine which terminals should have top priority for development and modernization. Very strict deadlines were set for completing the work. As a rule, they amounted to a few weeks, and only in extreme cases or where considerable volumes were involved did they consist of two or three months. It was decided to attract the efforts and means of the entire railroad into taking part in this construction.

We understood that it was necessary to concentrate manpower, machinery, materials, and equipment on the decisive projects, to think through the organization of the matter to the smallest detail, and to develop socialist competition on a broad basis. We also had to concern ourselves with arranging to feed people as well as providing their everyday services. To do all this, staffs were set up at each "hot spot," headed up by deputy chiefs of the railroad. A great deal of aid was rendered to the staffs by the local party and soviet organs, as well as the railroad's trade-union organizations.

Thanks to well-targeted work, they managed to accomplish much within a brief period of time, less than a year.

The Chu Terminal, for example, was the worst bottleneck on the entire southern route of the main line. And so, during the autumn of last year, we tackled it in earnest. During a month's time we built nine receiving-and-shipping tracks, new PTO's [production and technical sections], a compressor station, and an equipment facility with all the following apparatus: a pouring trestle, systems of fuel, water, lubrication, electric-power, and sand supplies. We laid more than 10 kilometers of track, installed more than 40 switches, 29 kilometers of cable, more than 20 kilometers of various pipelines; we also assembled apparatus for electric centralization. During the quarter more than 1,140,000 rubles were assimilated.

These figures speak for themselves. Toiling unselfishly here were railroad workers from many enterprises of the Chu, Dzhambul, Frunze, and Alma-Ata Divisions, along with workers and specialists from Semipalatinsk, Zashchita, Chimkent, united together in a single, friendly detachment. Operations were conducted around the clock. From 600 to 800 persons went out onto the reconstruction projects simultaneously, while during certain periods this figure amounted to as much as 1,000. The task assigned here was successfully handled by the staff which was headed up by the railroad's deputy chief of personnel, K. Sambetov, and the deputy chief of Kazakhtransstroy, F. Mordvinov.

The Otar Station--a junction between the Alma-Ata and Chu Divisions--was also seriously limiting the two-way traffic of trains. In accordance with the title for the reconstruction of the Alma-Ata--Chu Section, which is being carried out by Kazakhtransstroy, provisions have been made here to build a new, alternate park consisting of eight tracks. This year, however, the intention was merely to begin this work. But we decided to complete it by 1 September. The earth-work of the roadbed was finished and measured off by the builders. The operations people laid approximately 9 kilometers of track, 60 switches, and 65 kilometers of cable. And all this was accomplished during a period of three months. The builders erected an ETs [electric centralization] post, and the installation workers with the aid of the operations people quickly put it into operation. The following detail is noteworthy. It was intended to build the post of reinforced-concrete structural components. But none were available. It was necessary to radically revise the technical specifications. The planners coped with this complex task in four days. This is the speed of a "workers' relay race," when, instead of passive waiting, an enterprising spirit is manifested, and bold, decisive actions are taken.

Equipment, materials, and machinery were sent to Otar on a top-priority basis. If the builders turned out not to have them, the railroad allocated them from its own resources. When the operations people had difficulties with materials, the builders would come to help them out. Toiling shoulder to shoulder in order to modernize this station were trackworkers, communications people, and electricians from various divisions, along with engineers, technicians, and clerical employees of the mainline's administrative apparatus. Heading up this task was the railroad's chief engineer, N. Nikitin. The result, as they say, is right up front: the capacity of the Otar Junction has been doubled, and a reserve strength for at least 10 years ahead has been created.

This same procedure has been followed in developing the junction between our railroad and the Central Asian Railroads--the Chengel'dy Station. Although the assignment plan of the Sredaztransstroy Trust for the current year made provisions only for finishing operations, it was decided to complete construction of a new yard consisting of seven tracks by the end of the year. Three of them have already been put into operation. And this has substantially lightened the station's work load. Soon the remaining tracks will also begin to accept trains. The capacity of this station will likewise be doubled. We are confident that the exchange of trains with the Central Asian Railroad will be significantly facilitated. This junction will cease to be the talk of the town.

Within a single month's time the Semipalatinsk Station was modernized. Here it was necessary to shift the throat of two receiving-and-dispatching tracks. The operation was extremely complex. But the trackworkers of the Semipalatinsk and a number of other sections handled it with honor. Deserving of considerable merit in this was the staff directed by the railroad's deputy chief, L. Mukhamedgaliyev.

Large-scale projects are being carried out at the Alma-Ata-1 Station. Before the end of the year 10 new receiving-and-dispatching tracks will appear here, and the existing classification yard will be lengthened. More than half of the tracks have already been made operational.

Station maintenance of the renowned Turksib has literally undergone a "second birth." Within a minimal time period more than 20 stations here have "broadened their shoulders," including four classification yards. New tracks have been laid there, and existing tracks have been lengthened. A broad, mass "offensive" was waged, aimed at the fastest possible growth of through-traffic and freight-carrying capacities. The expenditures have already paid for themselves. Here too the guarantee of success was the close cooperation between the operations people, the builders, and the planners. Cooperation not in words but in deeds.

The following question may arise: what means and material resources are being used to carry out reconstruction on such a scale? A significant portion of the operations have been provided for by titles, while the remainder are carried out on funds drawn from amortization deductions. Materials of the superstructure, cables, and equipment are received by us in accordance with the supply plan from the transport builders as well as from industrial enterprises. A great deal of aid to the railroad is rendered by the main administrations of track, signaling and communications, and traffic of the Ministry of Railways. We make widespread use of local resources.

Of course, quite a few problems, and not simple ones either, have arisen. At Alma-Ata-1 Station, for example, there was a need to perform a considerable amount of earth work. On the entire area it was necessary to remove earth to a depth of as much as 4 meters. We were also confronted with the task of removing housing in which more than 20 families were living, change the position of metal LEP [electric-power transmission line] poles, and to transfer the base of one of the railroad construction trust's SMP's [construction and installation trains] to a new location, along with the point for current uncoupled car repair. We turned to the Alma-Ata Oblast Party Committee for cooperation. The station was visited by the obkom first secretary, K. Aukhadiyev, as well as the leading officials of the city and rayon party and soviet organs. Problems connected with the reconstruction of the station, on the solution of which depends, to a large extent, the transport service of the republic's capital, were specially examined in the obkom. The earthmoving operations were assigned to the highway construction workers, the LEP transfers--to the electric-power engineers; housing became the concern of the gorispolkom, and the allocation of a section of land for the base of the SMP was made the responsibility of the obispolkom. The planned operations have either been carried out already or are close to completion. Quite a few such examples could be cited.

Construction by one's own efforts and the reconstruction within brief time periods of existing stations are unthinkable without purposeful, painstaking work with people. Here too the role of the party and trade-union organizations of the divisions and enterprises is a great one. They became the organizers of a competition to put projects into operation ahead of schedule. Special groups of agitators and propagandists were created. They talk with people regularly and issue "combat leaflets," "lightning bolts," and "barbs." The progress of operations is regularly illuminated by our railroad newspaper ZHELEZNODOROZHNIK--TEMIRZHOLSHY.

Very carefully thought-through organization of the projects, reciprocal aid and assistance, as well as purposeful ideological provisions--all this, taken

together, has also brought about, it can be said without exaggeration, remarkable results. We are fully justified in considering that rapid reconstruction has also become a good school of management for many of our leading officials, engineers, and technicians. They have enriched their knowledge, and confidence has manifested itself in their efforts. The commanders have learned how to quickly gain their bearings under the most complicated circumstances.

A great deal, a very great deal of effort was required likewise to radically improve the technical maintenance and operation of the locomotive pool. The railroad had violations of the system of the planned-preventive repair of diesel locomotives, and there had been a lowering of the responsibility of locomotive crews for adjusting their engines. Hardly any of the depots fulfilled their programs for repair and technical servicing. The condition of the pool gradually worsened. And there came a time when the diesel locomotives began to be taken out en masse for repairs between use on trains. In this connection, the depot capacities were being used for "patching up" engines to the detriment of the planned-restorative operations.

We tackled the creation of additional capacities with determination. We quickly began building workshops made of prefabricated metal structural components at the Kazyl-kurt, Karatau, and Sary-Shagan Stations, and made of reinforced-concrete structural components at the Matay Station. The Chimkent and Charskaya Depots were re-equipped. Considerable efforts were also concentrated on these facilities. The builders installed the compartment section, trackworkers --the traction tracks, communications workers--various lines, and other types of railroad workers--facilities for water and fuel supplies as well as sewer systems.

Having transferred some of the engines to the newly created depots and having supplemented the yards of the Sary-Shagan and Sary-Ozek Depots, we immediately freed up capacities and people for handling the program of planned-preventive repair. The following figures testify as to what this yielded. During the three quarters of the current year, as compared to the corresponding period of last year, the number of TR-3 repairs carried out increased by 61 percent, TR-2 --by 7.8 percent, TR-1--by 15.9 percent, and T0-3--by 17.9 percent. If previously about 40 percent of the freight-traffic pool was operating with excessive intervals between repairs, now the normal system of planned-preventive restoration and current maintenance has basically been restored. There has been a reduction in the depot percentage of unadjusted locomotives. Steady traffic has come to be assured at the following locomotive depots: Alma-Ata, Dzhambul, Ayaguz, Sary-Ozek, Chimkent, and Pishpek. The quality indicators are improving, and there has been an increase in the average daily runs and productivity of diesel locomotives.

There has been an upgrading of the responsibility of the locomotive crews for the technical maintenance of their engines. The locomotive engineers and their assistants are acquiring the techniques of socialist conservation; they are becoming true masters of it, are putting their hearts into caring for their locomotives, and are attempting to operate them correctly without overloading them.

The base of the rail car and freight maintenance systems is likewise being strengthened. Points for preparing rolling stock are being built, and several mechanized freight facilities are under construction.

Energetic, purposeful work is beginning to bear fruit. The haulage plan on the Alma-Ata Railroad is now being regularly fulfilled from month to month. In comparison with last year, the volume of hauls has increased by 12.7 percent. The average daily amount shipped out has grown by 9 percent. The freight-turnover assignment is being over-fulfilled. The scope of train traffic has increased. Beginning with the first few days of the second half-year, the utilization indicators for rolling stock have improved. Car turnover has been speeded up. Idle times at technical stations and during loading and unloading operations have been reduced. Sectional speed has been raised.

In short, there has been a well-marked trend toward improvement in work quality along with a simultaneous growth in the volume of hauls. Our top-priority task is to reinforce this gratifyingly dynamic growth. And we have a precise program for achieving this. We are convinced that this mainline, having overcome its difficulties, will confidently stride forward in order to fully satisfy the needs of the national economy and the population of this important region of the country for hauls.

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RAIL SYSTEM

COMPLETION OF MAJOR ROSTOV-ON-DON RAIL BYPASS

Moscow PRAVDA in Russian 20 Dec 83 p 2

(Article by M. Kryukov, PRAVDA correspondent: "In Transit Past Rostov")

(Text) On one of the major construction projects in the southern part of the country--the Western Transport Bypass near Rostov-on-Don--a remarkable event occurred: a locomotive passed across the main riverbed of the Don over a new bridge.

The chief of the North Caucasus Railroad, F. Kotlayarenko, tells the story as follows:

"Rostov is called the gateway to the Caucasus. But for us railroad workers this gate became too narrow long ago. The railroad junction is operating at its limit. Passing through it are all the passenger and freight trains proceeding from the West and the North to the South. Visit the station's waiting-room--you will hear the loudspeaker uninterruptedly announcing the passing trains. There was only one solution--let some of the trains bypass Rostov. And for this purpose construction was begun on a new mainline, named the Western Transport Bypass. It was proposed to send a considerable portion of the freight transit flow through it, bypassing Rostov. This is in the interests not only of the Rostovans. More than 120 million rubles was disbursed in order to widen the 'gate.' The Communists of the oblast took this construction project under strict monitoring controls; taking part in it were builders from the Sevkavtransstroy Trust, Bridge Detachment Number 10, groups of many enterprises from the city, and student detachments.

"It was not a simple matter to build the Western Bypass. Among the numerous structures which the mainline had to put into operation were two bridges: one across the main river-bed of the Don, the second--800 meters in length--across the broad bottomland of the left bank. This bottomland is often inundated by spring floods; the 'crossing' had to be made through reeds and a swamp. In order to more successfully force a passage for these bridges, preliminary approach roads were constructed to this point--a highway and a railroad.

"I often had occasion to visit the construction site. It was something to see --the energy with which these people worked. Among them was the brigade of Honored Builder of the RSFSR I. Tsar'kov. It installed the bridge piers across the bottomland, and there were more than 40 of them. Operations did not cease

even during the floods. Heavy trucks, loaded with materials, kept moving along the road, with the water pressing in from both sides.

And the bridge across the main river-bed rapidly took on the outlines intended by the plan. The hydro-geological conditions were complex; the shell-type pilings--concrete cylinders--were sunk to great depths. Many brigades exhibited initiative and keenness of wit. Thus, for example, the derrick-mounted shovel was set up so that they managed to get by without installing a track under the crane unit. And this meant quite a savings on metal.

On New Year's Eve regular train traffic will begin here. Up to 40 percent of the freight trains will proceed from north to south, bypassing Rostov, in transit through the Western Bypass.

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MARITIME AND RIVER FLEETS

RSFSR RIVER FLEET MINISTER ON 1983 SECTOR PERFORMANCE

Moscow VODNYY TRANSPORT in Russian 22 Dec 83 p 2

[Article by L.V. Bagrov, minister, RSFSR River Fleet: "Improving Efficiency In Shipping Operations"]

[Text] Water transportation plays a great role in the complex economic system in our country; it links together many elements of the developing economy. This is why the river personnel of the Russian Federation have done everything during the current navigational season to improve the efficiency of river shipping. For 1983 alone, it was envisaged through socialist obligations to deliver 7.5 million tons above-plan with freight turnover equal to 3 billion ton-kilometers. It must be directly stated that we attained that lofty goal! This constituted a great victory of labor for vessel crews, shore-based enterprise collectives, and organizations of the Ministry of the River Fleet, and represented a real contribution on the part of the water basins toward strengthening the might and prosperity of our great Motherland.

Particularly noteworthy is the operation of the Ob-Irtysh Associated Shipping Line, established only a year ago. This collective, under difficult conditions of coming into being and adverse weather successfully concluded the plan for both indicators, increasing cargo shipping by 8.3 percent for tonnage, and by 9.1 percent for freight turnover when compared to 1982 levels. At the same time, delivery of all cargoes to the oil-gas producing areas was provided for, and even the defined goal of 300,000 tons was met. It can be stated directly that the decision to organize this shipping line was correctly taken and the young collective has withstood a serious test with honor. Certainly, the labor contributions of the following shipping line collectives must be noted in the overall undertaking: Volgotanker, Kamsk, Moscow, Western Siberian, and the Volga Associated Shipping Line.

The following motor vessel crews bore with honor the banners of competition initiators and met all intensified obligations: "Volgo-Don 237", Kamsk Shipping Line, (Captain Boris Mikhaylovich Kobelev); OT-2010, Western Siberian Shipping Line, (Captain Vladimir Petrovich Cherepanov); ST-762, Volga Associated Shipping Line, (Captain Vladimir Nikolayevich Yablokov); "Semen Morozov", Volgo-Donskoy Shipping Line, (Captain Vladimir Alekseyevich Serobabin); and the Volga diesel-electric vessel "Soviet Union", (Captain Boris Andreyevich Belodvortsev).

Yes, a great deal was done during the past navigational season. However, it surely is time now to discuss what 1984 holds for us. The Ministry of the River Fleet is to ship 524 million tons of the economy's freight, with a freight turnover of 261 billion ton-kilometers. This considerably exceeds the task of the current year.

There is yet another feature of the upcoming navigational season--during spring, summer, and fall we must increase shipment of freight on a monthly basis not by 2.2. percent, but by 5-7 percent, inasmuch as we cannot count on such an early opening of the rivers in the European part of the republic as occurred this spring, and the period of fleet operations will be that of the average over many years.

It is now time, at the close of the current year, to make provision for everything, to critically evaluate what has been achieved, and to see existing shortcomings and unused reserves. Using that as a basis, methods must be defined to further develop our transportation sector and measures guaranteeing unconditional fulfillment of state plans for delivery of freight and passengers for 1984 and the five-year period overall must be developed.

For us, the river workers, one of the most complex questions is the situation with respect to freight traffic volume. Despite the very important decisions taken to obligate managers of shipping lines and ports, appropriate ministry administration chiefs, "GIPRORECHTRANS" [State Institute for Planning in River Transportation], and TsNIIEVT [Central Scientific Research Institute of Economics and Operation of Water Transportation] to identify and attract freight traffic to river transportation through a radically revamped approach, the situation here has not been corrected. Thus, for 3 years of the current five-year plan, of the overall increase in shipping of 33 million tons, 23 million tons constituted construction cargoes and only 10 million tons were of remaining classes. This situation must be corrected, and no repetition permitted of what transpired in 1983, when only seven of a total of 15 items of plan categories were fulfilled. In actuality, we do not have a single shipping line which fulfilled all shipping categories tasks.

Only an underestimation of the total importance of the problem and a continuing lack of understanding on the part of the MRF administrations and shipping line managers can explain also the fact that in 1983 the plan for shipment of salt fell 60,000 tons short, the shipment of slag was 16,000 tons short, and the delivery of flux was 27,000 tons short.

In the current year, deliveries have been weak to our transshipment ports for pyrite, coal, timber, and metal, and grain cargoes have not been fully provided for transshipment. I will not make unfounded statements, but will cite the figure--for the eastern ports alone, more than 1.2 million tons of planned transshipment cargoes did not arrive.

The plan assignment for shipments via direct combined rail-water transport was fulfilled by us by only 86.7 percent. Approximately 73,000 loaded and 40,000 empty railcars failed to be supplied to the river ports, which resulted in high demurrage for the fleet.

However, at the same time, such major ports as Osetrovo, Khabarovsk, Poyakovo, Krasnoyarsk, Tobolsk, Yaroslavl and various others systematically failed to fulfill monthly norms for unloading of railcars. What is more, every third one of our ports unloaded railroad rolling stock in less than a timely manner, and tolerated the delay of cars in unloading.

A particularly adverse situation existed during the current navigational season in the port of Osetrovo. Despite continuous assistance provided by workers, managers of the shipping line and the port frequently permitted the accumulation of railcars, which often led to intervention by the regulatory agencies.

Such was the situation for navigation in 1983. In the future, we must not tolerate such occurrences. It is obligatory that there be a radical change in operations with consigners and consignees, that close contacts be established with them, that the most competent and energetic of our specialists be assigned to this sector, that continuous efforts be made to find new and effective traffic flows, and that the management of this work be effectively carried out.

Of no lesser importance in our economic operation is the need to improve use of the transportation fleet. By resolution of the regulating agencies, provision has been made to increase the gross productivity overall for our cargo fleet in 1985 by 6 percent compared to 1980. Over 3 years, the growth in gross productivity was to have been 3.6 percent. Actually, gross productivity grew relative to 1980 by only 1.5 to 2 percent overall, which indicates that plan assignments were unfulfilled. What conclusion can be drawn here?

Shipping line managers must again critically examine the results of fleet utilization, restructure the operations apparatus, and increase the responsibility for fulfillment of indicators for productivity. For the upcoming navigational season, we are to elevate gross productivity to a level which exceeds that of 1980 by 4.8 percent.

The collectives of our ports provided for the fulfillment of tasks and socialist obligations for volume of transshipping operations and the extraction of non-metalliferous construction materials. This is a great victory of labor. Work continued to improve the interoperations of various forms of transportation based upon the method of the Leningrad transportation workers, as approved by the CPSU CC, which enabled the standing time of the transit fleet to be reduced by 1.2 percent, and by 1.8 percent for railcars when compared to the established norms.

An initiator of socialist competition was the augmented integrated team of the Novosibirsk port, headed by Anatoliy Dmitriyevich Slobodyannik, fulfilling the plan and increased socialist obligations ahead-of-schedule for 1983.

Great successes were attained in the accelerated processing of vessels and railcars by teams of the Osetrovo and Rostov ports under the direction of State Prize laureates Valentin Yakovlevich Tayurskiy and Viktor Ivanovich Zablotskiy.

Yet, the operation of the ports overall still does not meet growing requirements and frequently the collectives of port personnel do not fulfill the most important operational indicator, that of reducing standing time of the transit fleet for unloading, which inevitably results in losses. Above-plan demurrage of the transit fleet in ports and at berths of clients for 1983 alone amounted to more than 16 million ton-days. Serious shortcomings continue to occur in the operation of transshipment equipment. The following fact would serve to illustrate. With a high demand in the shipping lines for floating cranes and continuous requests for their allocation, in the Western Siberian Shipping line alone during the navigational season, seven crane booms were out of commission. Is this really how to operate expensive equipment?

Considerable reserves are available through a more even receipt of the fleet for processing at the ports and clients' berths. Certain things have been done in this process. For example, monitoring has been strengthened over the rhythmic dispatch of vessels, scheduling operations have been improved, and above-plan demurrage of transit vessels awaiting processing has been reduced to almost half the 1980 total. The figure itself, however, 9 million ton-days, which is what the fleet lost in above-plan demurrage, speaks for itself.

As a result, the operations apparatus of the shipping lines must focus attention on those cases where vessels are dispatched without a forecast evaluation of the situation regarding processing at the point of destination.

During the 1983 navigational season, losses increased significantly in the Volga Associated, Amur, and the White Sea-Onega Shipping Lines.

It is obvious that the managers of these shipping lines must analyze the situation in this sector of operations and undertake additional measures to safeguard cargoes and upgrade campaigns against misappropriation.

An important condition for improving the quality of cargo shipping and for ensuring safety of cargo is the development of cargo shipment in containers and packets by river. Specific work is being done in this direction by the shipping lines and ports in conjunction with the consigners--agencies of USSR Gossnab. Plans for container deliveries have been fulfilled, and shipment of goods in packet form has risen. Demurrage of containers exceeded norms for turnover on an average for the Ministry of River Fleet by almost 3 days, particularly in the Volga Associated (5 days), Ob-Irtysh (6 days), Belskiy (7 days), Volgo-Donskoy (8 days), and the Western Siberian (12 days) shipping lines.

Certain eastern ports continue to be in arrears with huge liabilities for the return of containers to the railroads. The liability of the Osetrovo port alone numbers 43,000 containers, and Krasnoyarsk owes 11,000 with no provision for their repair locally.

A good deal has been done in our shipping lines to improve the organization of passenger traffic, the development of the material-technical base, the consolidation of labor and production discipline, and improvement of service

for river tourists. However, major shortcomings continue to take place in the organization of passenger service, and vessel traffic schedule violations are tolerated. A particularly large number of complaints is lodged by the public against the operations of small river transit and travel. Over the course of the last 2 years of the five-year plan, tasks have not been fulfilled for passenger traffic turnover.

During the upcoming navigational season, transport of passengers must reach the 106 million mark. Providing for the growth projected in this area for the next year and the long term together with improved usage of existing motor vessels will be possible only through rapid upgrading of the fleet. However, we are slow to resolve the problems associated with the replacement of both physically and aesthetically obsolete motor vessels of the "Moskvich" type, and the development of vessels for rivers and reservoirs.

With contemporary intensity of fleet traffic, the efficiency of its operations is greatly dependent upon the technical condition of the waterways and vessel-passage facilities, and the degree of reliability of operational navigational equipment. River personnel readied hydrotechnical installations in a timely manner for operation during the early spring period of the current navigational season.

The Konstantinovsk Hydrocomplex on the Lower Don went into operation in 1983. The vessel locks worked more reliably and stably. Nevertheless, in certain basins, particularly in the Ob-Tazovskiy Bay, on the Irtysh below Omsk, and on the Upper Lena, there were instances where the depth was not maintained.

As the result of weak labor and production discipline in certain subelements of our routes organization, navigational equipment for ship passages is still being maintained unsatisfactorily, and this situation creates accident possibilities.

It is necessary to dwell upon particularly the question of economical expenditure of fuel resources. Many of our shipping lines and enterprises and also a majority of ship captains and mechanics correctly understand the situation, and expeditiously outline and implement measures to reduce expenditure of fuel and electric power. In the current year, provision is being made to fulfill expenditure norms for fuel and electric power, and a savings of approximately 40,000 tons of standard fuel, 35,000 gigacalories of heat, and 13 million kilowatt hours of electricity is anticipated. These resources are sufficient to operate a single shipping line for the entire navigational season.

The goal for 1984 for savings in diesel fuel for the RSFSR Ministry of the River Fleet has been established at 107,000 tons. It is necessary now to develop measures to sharply reduce the expenditure of fuel. Increasing the service-auxiliary fleet must be considered simply unacceptable. Empty runs of vessels must be reduced, optimum speeds instituted, and levels of technical operations increased for machinery.

Industrial enterprises of our ministry basically effected the past winter ship repair program in an organized manner and placed a large part of the fleet in operation on time. Provisions are being made to satisfy the 1983 plan for normatives in net productivity with growth of 4.5 percent compared to 1982, for productivity of labor, and balance sheet profit and costs.

However, at the same time, certain shipping lines during preparation for and conduct of ship repair operations tolerated serious shortcomings, the result of which were disruptions of deadlines for placing vessels in operation. Such instances took place in the Volgotanker, Lensk Associated, Amursk, Yenisey, and other lines.

Undertaking of the ship repair operation is progressing with a more organized approach this year. Thus, on 1 December, processing for repair of the fleet considerably exceeded the level of last year. At the same time, managers of the Volzhsk Associated, Volgotanker, Kamsk, Volgo-Donskoy and the Western Siberian lines did not provide for plan tasks relating to docking and delivery of vessels for medium repair and overhaul.

Of decisive significance in the timely and qualitative preparation of the fleet for 1984 navigation is the dissemination of expertise from leading collectives and initiators of socialist competition--collectives from the Krasnoyarsk and Astrakhan Ship Repair Plants imeni Lenin, and crews from the Western Siberian Shipping Line. It is necessary to even more broadly and rapidly spread these valuable initiatives to all our enterprises, to more actively involve personnel afloat in conducting repair operations. It is mandatory that additional measures be developed to increase the level of fleet technical operations and improve the reliability of motor vessel operations, to strictly fulfill plan technical servicing of shipborne equipment, engine-cleaning, docking, monitoring inspections and checks, and other work established by normative documentation, and to fully outfit shore-based industrial sectors.

Unflagging attention must be paid to the ministry's shipbuilding activities. Despite a certain degree of growth in the volumes of shipbuilding when compared to 1982, nevertheless provision is not currently being made to fulfill the current year plan for tonnage, behind 25,000 tons and by 6,000 horsepower for tows. Greatest lags here were permitted by the Volzhsk Associated, Vyatskoye, Ob-Irtysh, and the Western Siberian shipping lines.

For the upcoming year of 1984, plans call for the construction of self-propelled and non-self-propelled tonnage in quantities significantly exceeding the task of the current year.

To cope with this complex task, continuous improvement is needed in the organization and technology of shipbuilding, to more actively implement programs to reduce manual labor, and to expand the brigade method of operations.

Now, concerning the situation regarding capital construction. Here we have yet an unfavorable situation. The management of such lines as the Volgotanker, Amursk, Yenisey, Volzhsk Associated, Kamsk, and several others are

not fulfilling the plan for the most important construction projects for river transport, and are postponing introduction of production facilities and of living quarters to the end of the year.

In 1984, the ministry is to assimilate up to 700 million rubles in capital investments, including 118 million rubles for construction-installation operations. Construction must be concluded on the port of Khabarovsk, of a number of facilities for the transportation exploitation of the Cheboksary and Nizhne-Kamsk GES, of technical training facilities in Irkutsk and Omsk of 960 seat capacity and of numerous others.

We will have to introduce 290,000 square meters of total area in living quarters.

The ministerial collegium recently reviewed the matter of scientific-technical progress in river transportation and leveled sharp criticism at the managers of the Technical Administration, who reduced requirements for shipping lines, institutes, and design bureaus, and did not ensure a change in increasing the level of organizational work to formulate a new unified technical policy in the sector, and in the conduct of research in the decisive sectors of ministry activities.

MRF organizations and subelements are making a great contribution to the development of the Food Program. Prior to the end of 1983, 40 new commercial and public catering facilities will be placed in operation. Our subsidiary farms have provided 2,600 tons of meat, 8 million eggs, and 11,000 tons of potatoes for the river workers' tables.

However, the situation regarding labor supply far from satisfies current demands. Continuous commercial servicing of the fleet is being developed at an extremely slow rate, and the network of stores and departments for the receipt of orders and sale of food products, convenience foods, and culinary items on industrial enterprise grounds is weakly developed, and attention has waned toward the development of a network of workers' dining facilities. Consequently, there is a great amount of work to do here.

The matter of commercial service to the river workers must be constantly in the field of vision for the managers of our enterprises, as well as workers in the RSFSR MRF Glavurs [Main Administration of Workers' Supply].

Recently, in the city of Gorkiy, a republic conference was held at which the results of the 1983 navigational season were reviewed, as were the tasks of the river fleet workers to ensure safety of navigation. It is obligatory that the appeal of the conference participants, "For the River Fleet--exemplary order and high discipline" be taken to heart by every worker of the blue routes. Discipline and a high degree of awareness on the part of every worker are requisite conditions for the successful resolution of the tasks facing water transportation.

At a commemorative gathering in the Kremlin in honor of the 60th anniversary of the USSR, General Secretary of the CPSU CC, comrade Yu.V. Andropov enumerated

further improvements in the area of transportation operations as one of the most important tasks. "In a state so vast as ours, transportation plays an absolutely special role, a role both economic and political, and if you will, a psychological one".

Such is the lofty evaluation of the transportation workers. The river workers of the Russian Federation will do everything to increase the efficiency of shipping and to ensure the unconditional fulfillment of plans for 1984 and the five-year period overall.

Now the efforts of our labor collectives must be concentrated on readying all elements of the Ministry of the River Fleet to conduct a successful 1984 navigational season.

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MARITIME AND RIVER FLEETS

TESTING OF 'BARS' EXPERIMENTAL ACV CONTINUES

Moscow PRAVDA in Russian 28 Oct 83 p 6

[Article by A. Sergeyev: "The 'Bars' Will Fly Over Shoals"]

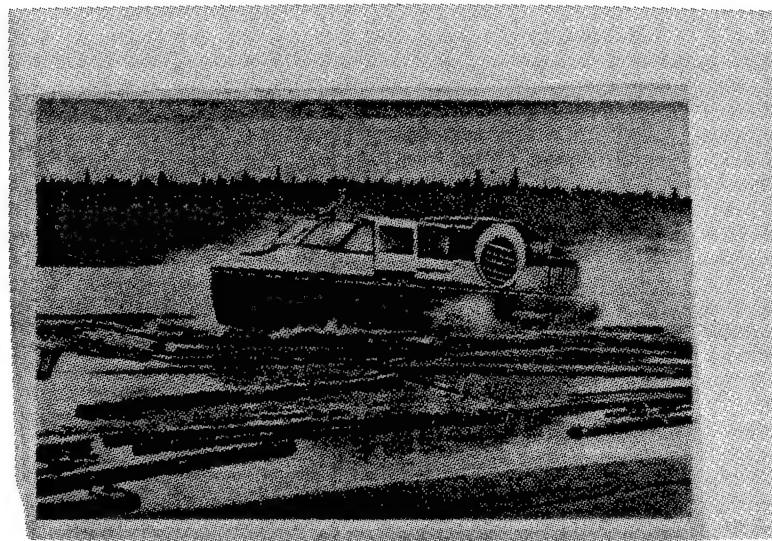
[Text] The new river amphibious, air-cushioned motorboat created by Soviet designers has received the name "Bars." "PRAVDA" has already reported on its first steps. Now the motorboat has successfully passed various tests and is undergoing experimental operations on one of our northern rivers--the Pinega.

It will be recalled that the idea of "Bars" belongs to a group of specialists from the "Neptune" central design bureau from where many of the so-called small fleet ships, which are being created for the national economy and those who enjoy water recreation, received their start in life. This time a motorboat entirely unlike its brothers emerged from its walls. And what is more, it even differs from the air-cushioned ships which have now become customary. First of all is the fact that it is actuated by the jet stream of centrifugal fans, although aircraft propellers perform a similar task in the majority of other designs. The creators of "Bars" decided to abandon them first of all for noise reduction, and secondly for the sake of safety and reliability.

There is only one internal combustion engine on the new motorboat. It also precisely turns the low-revolution fan from which a portion of the air enters a peculiar skirt out of rubberized fabric which tightly fits the hull of the ship, and the other portion enters the jet nozzles located in the stern. This stream pushes the "Bars" and works at the rudders. The motorboat is frequently called a flying one. There is also a reason for this. The more it increases the engine's revolutions the more noticeably the rubber skirt is inflated. In this case the air cushion being formed also slightly lifts the ship over any surface.

"Since the beginning of experimental operations, the "Bars" has made 98 trips along the Pinega," relates I. Motrashilin, column chief of the propeller-driven and water motor transport base of the Arkhangelsk production and technical communications administration. "By today 22,622 kilometers have been covered by the motorboat. It's been on its way more than 500 hours servicing 17 remote branch communications offices of the northern area. Approximately 30 tons of mail were delivered according to destination in a timely manner with the ship.

The ship registered an average speed of 43 kilometers per hour, although it reaches a maximum speed of 70. However, to such extent that these figures would become important for the subsequent fate of the flying motorboat, they mean very little by themselves. It's necessary to take a clear view of under what conditions the results were achieved."



In the photograph, the "Bars" easily coped with this obstacle which it encountered during mail delivery along the Pinega River.

Take over the shoals and sand spits of which there are a lot in the blue main waterways of the north. As a rule, river transport loses time detouring round obstacles of this kind. But they didn't prove to be frightful for the "Bars". While not turning off the direct course, it flew off in a dashing manner towards land, and then, when the difficult section ended, it slid back into the water. Summer on the river is the time for stream driving timber. And here the amphibious motorboat behaved magnificently. Just as easily as in the water, it soared over the logs and also at the same time over reeds, grass and country roads. As it happened, it delivered mail almost to the very doors of the branch communications office. During high water in the spring, it overcame broken ice without difficulty and "proceeded" along the boggy fields and swamps.

The communications workers anticipate the effect of using the "Bars" this fall too. During this period of approximately two months, mail is delivered to the remote northern settlements with considerable interruptions. The reasons are: freezing over of the rivers, periods of bad conditions on the roads, and dense fogs and heavy winds which hamper aircraft operations. And here, as previous tests showed, the amphibious motorboat can also be found in the role of search and rescue. Moreover, according to the evaluations of the drivers, it is simple, reliable and easy to operate.

"We're already convinced of the merits of the 'Bars,'" such is the opinion of V. Korshunov, chief of the main administration for the mechanization of transport of the RSFSR Ministry of Communications. "It would simply be indispensable in those regions where for the time being mail delivery is associated with difficulties. Following the first amphibious motorboat, we are hoping also to obtain at our disposal other ships of this kind which are capable of conducting a watch year round. Of course, the areas of application of so universal a ship can be expanded considerably."

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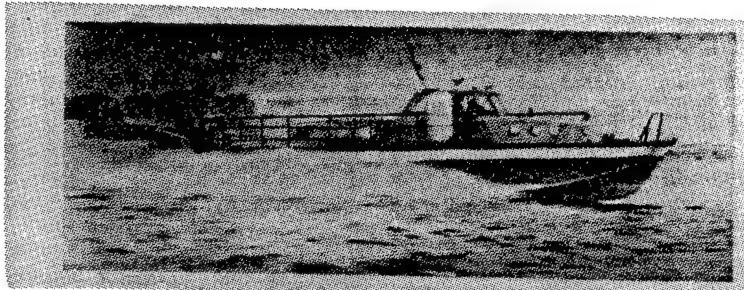
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MARITIME AND RIVER FLEETS

EXPERIMENTAL VESSEL DEMONSTRATES AIR LUBRICATION EFFECT

Leningrad LENINGRADSKAYA PRAVDA in Russian 16 Oct 83, p 3

[Article by V. Volkov: "You Can't Keep Up With the 'ZHULAN'"]



[Text] /Here indeed is really the very instance when appearance is deceiving. The motorboat under the design name "ZHULAN," and on which we are speeding around the bay, isn't anything special in appearance. It doesn't occur to a person from somewhere else that a ship so ordinary in outward appearance can possess such outstanding high-speed characteristics. And it even becomes interesting what they are thinking over there on the "METEOR," which is following at a distance on the same course, but it never shortened the distance by a single cable./ [in boldface]

"When they put to sea the first time on the 'ZHULAN' and on the spot ran circles around both the 'RAKETA' and the 'METEOR,' they completely amazed the river transportation workers," delivery captain L. V. Posseker related with a gratified expression. "And indeed, their ships are on hydrofoils, and we more or less don't have any design changes whatever. They were surprised: 'What kind of marvel is this? It was a special motor in yours.'"

G.M. Fedulin, the project's deputy chief designer from the 'Vostok' TsKB [central design bureau], enters the conversation: "But hardly by virtue of the engine, although here it's not one of the low-powered ones, and you won't get up similar speed on ships with conventional lines. And, as you could make certain, we have it up to 70 kilometers per hour. The whole point is in the original method of supporting the ship in the water. Remember the unconventional design of its bottom."

The bottom of this motorboat really looks unusual. I saw the "ZHULAN" when it was still standing at the building berth and the brigades of A. I. Khrustov and V. M. Mikhaylov from the TsKB's metal structure shop were assembling it. Almost from the very bow and to the edge of the stern, it's substantially recessed practically along its entire breadth. At that time, the designers explained that this recess by itself still doesn't provide anything. Well, they put the motorboat in the water and it fills it with no effect whatever. But imagine now that air is being forced here. Keep it along the entire area of the recess and it forces out the water and displaces it. Then the ship will touch the water's surface no longer by means of its bottom, but rather via an air bubble or pocket, to use the language of the specialists. An air lubrication effect is produced in its own way. The force of friction is instantly reduced and speed increases accordingly.

Up to now the fleet still didn't have a knowledge of such designs. For a long time since it has existed, the question invariably arose: by virtue of what to improve the high-speed characteristics of ships. Finally the moment comes for all modifications when the drag of the water doesn't allow stepping over the speed limit. And, perhaps, not for a single other kind of transport as the one that is connected with movement on water is each increase in speed produced with such difficulty. All kinds of alternative methods were examined with one purpose: to reduce its inhibiting characteristics. So designs on hydrofoils and an air cushion appeared.

And in addition to these findings, this idea also invariably occurred: it's possible to reduce hydrodynamic resistance even through very simple means--supplying a gas to the wet surface of the bottom. It appeared as far back as 100 years ago and is based on purely intuitive considerations as if the gas flows uniformly around the bottom in a comparatively thin layer. And since friction against the air is negligible--its density is approximately 800 times less than that of the water--it is to be expected that drag drops drastically owing to an interlayer of this kind. So, for no particular reason, and without rhyme or reason, it's possible to considerably increase the performance coefficient of ships.

The idea not only looked tempting, but also easy to realize. There didn't appear to be anything complicated here: you just blow the air from underneath the bottom and while flowing it will create a peculiar lubricating effect.

However, not one of the numerous experiments conducted both abroad and in our country provided significant results. The air wasn't retained and, persistently not desiring to serve as a lubricant, it escaped from under the bottom as bubbles. In addition, the exactly opposite effect was obtained during separate tests: instead of increasing, the ship's speed fell.

At the beginning of the 1960's, they became seriously interested in the idea at the TsNII [Central Scientific Research Institute] imeni Academician A. N. Krylov. Upon the initiative of Professor and Doctor of Technical Sciences I. A. Titov, a Lenin Prize laureate, they devoted themselves to its theoretical substantiation. Professors and Doctors of Technical Sciences A. N. Ivanov, A. A. Butuzov and a number of other workers at the institute joined the research in real earnest.

The scientists came to a curious conclusion: the idea to make air a lubricant, they declared, by itself is feasible. But until recently with the best will in the world it couldn't become reality. All previous findings were conducted only experimentally, gropingly and according to the principle "but it will suddenly turn out," and in short they didn't have a sufficient scientific basis. It emerged with only an improvement in the theory of so-called developed cavitation flows (conditions for forming stable air bubbles near the surface of a body moving in water) and methods for calculating them mathematically. While being based on this theory, the scientists didn't simply substantiate the vitality of the original idea, but they also calculated it mathematically and under what conditions it's feasible. In their opinion, the air can become a lubricant only in that case if the bottom is a particular geometrical configuration with definite parameters characteristic only of it. In other words, it must be retained precisely in it and the peculiar cavity in a sealed fashion. It remained to convert the mathematical formula to a real structure.

Model after model is being created and tested in the institute's basin. They took some great pains before they obtained a reassuring result. Having taken a five-ton motorboat as a basis, they have already reproduced a full scale model at the request of the TsNII at the Gorkiy TsKB for hydrofoil ships.

A fantastic picture appeared before those who were testing this model. They had just started replenishment of the air under the bottom, and as if somebody shoved the motorboat, it sharply increased speed.

The effect proved to be exceptional. Water resistance was reduced immediately by 30 percent. The model developed a speed of 10 kilometers more--a most substantial increase for water transport--than a motorboat with a similar engine and parameters, but without the air lubrication effect.

One can very well imagine what feelings everyone had at that moment who was involved in converting the original idea to reality. In point of fact, an era of fundamentally new types of ships was opened through these tests. Finally, 100 years after its conception the idea had become a reality.

And a model is still a model. It reproduced the idea, as it were, in a general way. An industrial model tested under operational conditions was needed in order to once and for all be convinced of the possibilities for creating similar ships on a broad scale.

At just this time, the RSFSR Ministry of the Forestry Industry addressed an order to the "Vostok" TsKB. It badly needs rapid and maneuverable means for moving on water in fighting forest fires. For the time being, means of this

kind are not available at the disposal of forestry workers and other specialists besides who, owing to the specific nature of their activities, must resort to water transport. Let's say there are those ships on hydrofoils, but although they're high-speed too, they won't do for everyone. They need space and you don't let them in shallow water. And besides, you don't come alongside at just any place because they require special berths. It was then that the designers of the "Vostok" TsKB also decided that the best means for moving on water was the one with which they had been engaged at the TsNII imeni Academician A. N. Krylov, and in the present situation you don't think up things. They decided to look once again more closely at this development.

"When they showed us the model at the institute," says chief designer of the project Ye. V. Zakharov, "The picture appeared impressive. The model was made from plexiglass and, as air being supplied to the ports made in the bow flows along the bottom, it was distinctly visible. And the model really slides on the interlayer of air. The water only flows around the bow and the skegs and little walls enclosing the hollow surface. Something is remotely common with a ship on an air cushion. But a special flexible barrier, which doesn't allow air to escape, was created there. And besides, the ship itself is a different and complex fulfillment. And, owing only to the unusual geometry of the bottom, the air here is retained with a solid bubble and without additional devices. All in all, we decided to make an industrial model."

It should be said frankly that specialists from the "Vostok" TsKB took a definite risk. A full-scale model is one thing and a ship which must be turned over for operation is an entirely different matter. In addition, this was proved right away: not everything that's suitable for a model is acceptable for an industrial model. For example, the fountain propeller (and for a number of reasons they decided to use precisely it) was removed to behind the stern. Under operational conditions, this will be the most vulnerable part and one which is not insured against constant breakdowns. Consequently, it's necessary to stow it in the hull. How then to fit both the "cavity" and the fountain in one space?

Or it's easy to say it's the bottom draught. It, we repeat, is a calculated mathematical geometric figure, and it required the exceptional flair of the designers and the high skill of those who assembled it in order to reproduce the necessary form with utmost precision. Only in this case the bubble will be retained in a sealed fashion and will not break down during tossing when the ship rolls from wave to wave. Let's add here solving the problem of manageability, stability on course, and the maintenance of backwards motion. No less important is that the series production will be like the first model. So, the design must be technologically feasible and acceptable for the plant manufacturer.

Finally, it's the first tests and right away the first disappointments. The bubble wasn't retained in the "cavity," air broke through into the fountain, and a gain in speed wasn't obtained.

Once again there are calculations. They are being conducted in close contact with workers of the TsKB and the TsNII. After repeated tests on the model, Igor' Novikov, a young engineer at the institute, is finding out how to protect the bubble from the fountain. Chief engineer V. G. Kalyuzhnyy is finishing a mold for the skegs. The "Vostok" specialists, and particularly the workers of the department which B. S. Semenov heads, proposed a number of original solutions. And here, for the first time in the practice of shipbuilding, this unusual principle of cavities was converted into a real structure suitable for operation.

The "ZHULAN" travels fast. For comparison, the force of friction here in comparison with hydroplanes meeting the same parameters was reduced by 15 to 20 percent. The motorboat is simple to service and requires small operating costs. The draught is only 30 centimeters when moving. And if one takes into account that a fountain tucked away in the hull was used in place of a propeller, then it isn't afraid of shoals either. If it encounters snags and logs along the way, it slips over them with a rush. It's maneuverable. The captain just swung it around almost on the spot. It takes up to 10 persons on board.

I'm descending into the cabin. There's a folding table. And two comfortable sofas. Raise their backs and now four persons can rest comfortably at the same time. Well, since this motorboat was created especially for firefighters, a place was allotted under the decking of the wheelhouse for portable fire extinguishers and in the after peak for hoses. Two radio sets are envisaged--one for communicating with aviators and the second with other ships and the base.

/The development accomplished by the "Vostok" TsKB specialists in cooperation with workers of the TsNII imeni Academician A. N. Krylov are opening great possibilities for creating both large and small high-speed multipurpose ships for the national economy.

The motorboat is accepted by the client and set out at its own pace for Petrozavodsk where it is faced with performing service.

Consequently, a new one with an air cavity on the bottom was added to the types of ships which were widely well-known in the past./ [in boldface]

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MARITIME AND RIVER FLEETS

MARITIME FLEET TAKES STEPS TO IMPROVE SHIPPING SAFETY

Moscow VODNYY TRANSPORT in Russian 22 Oct 83 p 3

[Article: "USSR Ministry of the Maritime Fleet Collegium Meeting"]

[Text] The collegium discussed information relating to sector programs which have been conducted to ensure accident-free fleet operations. The All-Union Association "Moreplavaniye" is carrying out multiple-plan purposeful work to improve navigational safety. In recent years, a system for separating ship traffic in all maritime basins of the country, and in areas having high-intensity navigation has been introduced. Instructions have been developed for the organization of navigation service aboard vessels of the ministry, and have been implemented, as have International Rules For Collision Prevention Of Sea-Going Vessels, 1972, 1974 Requirements of the Convention On Protecting Life At Sea, including the 1978 protocol. Annual conventions are conducted with the deputy chiefs navigational safety of steamship companies, port captains, and chiefs of EO ASPTR [Evacuation Departments, Emergency Salvage Ship Repair and Underwater Technical Operations].

Considerable attention is being devoted to further equipping the fleet with modern navigational and communications gear, and as a result, virtually all transport ships today are equipped with two radars. Equipping of base ports with shore-based shipping traffic control systems has continued. Simulator trainers have been introduced to develop practical skills for ship navigators in ship separation in the Far East, Estonian, and Georgian Shipping Lines, and in Leningrad a trainer-research center has begun operation at the TsNIIMF [Maritime Fleet Central Scientific-Research Institute] and BMP [Baltic Maritime Steamship Company] base.

Each year in our country's radar training facilities, more than 2,000 navigators undergo training, and 15-20 persons attend the trainer-simulator center in Grenoble.

This year, the International Satellite Communications Center in Odessa is being commissioned.

Proposals have been made for the "Moreplavaniye" Association to increase organizational work in the steamship company: navigational safety, equipping of the fleet with modern navigational equipment and qualifications of management personnel afloat, work directed toward prevention of accidents in maritime transport.

MARITIME AND RIVER FLEETS

SCIENTIFIC-TECHNICAL PROGRESS SOUGHT FOR RIVER FLEET

Moscow VODNYY TRANSPORT in Russian 3 Dec 83 p 3

[Article: RSFSR Ministry of the River Fleet Collegium Meeting"]

[Text] The collegium of the RSFSR Ministry of the River Fleet reviewed the question of programs to accelerate scientific-technical progress in river transportation.

The conference noted that in recent years the transport and technical fleet of the sector has continued to be supplied with new high-efficiency vessels, and highly-productive loading machinery has been installed in a number of ports. New technological processes have been introduced in the fleet, ports, hydraulic installations, and industrial enterprises.

At the same time, there have been substantive shortcomings in the use of the sector's scientific-technical potential, in the conducting of scientific research, and the introduction of new technology.

The collegium proposed to scientific-research and higher education institutions that particular attention be directed toward study of problems aimed at increasing productivity of labor and quality of operations, and greater utilization of the sector's production potential. Main administrations and ministry administrations have been charged to more persistently coordinate the work of institutes, design bureaus and developmental production in the organization of research, and of planning-design initiatives and their introduction into production.

Managers of main administrations, scientific organizations and planning-design bureaus must focus particular attention upon the timely fulfillment of work enunciated in the comprehensive plan for scientific-technical progress for river transport in the RSFSR for the period 1981-1985.

It is proposed that the technical administration develop, in conjunction with the appropriate main administrations, additional measures for 1981-1985 and a program of work for the Twelfth Five-Year Plan to accelerate scientific-technical progress in the sector.

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MARITIME AND RIVER FLEETS

EFFORTS TO INCREASE MARITIME FLEET FUEL CONSERVATION

Moscow MORSKOY FLOT in Russian No 1, Jan 84 pp 46-47

[Article by V. Bol'shakov of the TsNIIMF [Central Scientific Research Institute of the Maritime Fleet]: "The Utilization of Fuel in the Fleet" under the heading: "Conserving Energy Resources".]

[Text] For the development and introduction into the maritime transportation system of new technical equipment and technologies for conserving all kinds of fuel and energy resources, a group of workers of the maritime fleet were awarded the State Prize of the USSR in the field of science and technology for 1983. Among those honored were: V. Agafonov, chief engineer of the Latvian Steamship Company; V. Androsov, engineer tutor of the Novorossiysk Steamship Company; S. Dranitsyn, deputy director of the TsNIIMF; V. Bol'shakov, head of a section in the same institute; Yu. Vakhrameyev, chief of services of the Black Sea Steamship Company; Ye. Malanyuk, chief engineer of the Baltic TsPKB [Central Planning and Design Bureau]; Ye. Rayevskaya, senior engineer of the V/O [All-Union Association] Morskhsudoremprom [Maritime Technical Ship Repair Industry ?]; V. Solodukhin, deputy chief of a shop of the Odessa SRZ [Ship Repair Plant] imeni 50 Years of the Soviet Ukraine; Ye. Salnikov, chief of a department of the Far East Steamship Company; G. Samoylov, senior engineer of the motorship "Kovda" of the Northern Steamship Company; and O. Tsvetkov, chief of a department of the Baltic Steamship Company.

Published below is an article by one of the Laureates, V. Bol'shakov, in which he tells about the principal directions of the work being done by the TsNIIMF and other organizations on the efficient use of fuel and energy resources in maritime transportation.

In maritime transportation, work in the field of the efficient utilization of fuel and energy resources was begun in the 1960s and is being carried on annually in accordance with the plans for scientific research work. To solve

this major problem for the national economy of the country and for our industrial sector, the scientific and engineering staff of the TsNIIMF, of design organizations, of educational establishments, and of steamship companies have been enlisted.

Efforts have been and are being made in the direction of diminishing the fleet demand for diesel distillate fuels by replacing them with less scarce and cheaper fuels of elevated or high viscosity. These efforts include more economical consumption of all kinds of fuel and energy resources used in maritime transportation. Over the period from 1965 to 1980, the proportion of the demand for diesel fuel by motorships was lowered from 71 to 16 percent. In the 10th Five-Year Plan alone, the substitution of elevated and high-viscosity fuels led to the release of about 9 million tons of diesel fuel for the national economy. In that same Five-Year Plan, 1.1 million tons of standard fuel was saved. Over the period from 1965 to 1980 the specific consumption of standard fuel in transport production was lowered from 14.0 to 10.7 kg per thousand tonnage-miles. Specific fuel costs, according to the report on expenditures for fuel and energy resources, were reduced from 142 to 78 rubles per thousand rubles of transport production by the maritime fleet. The annual economic gain from the introduction of the work in the field of efficient utilization of fuel and energy resources amounts to about 8 million rubles. Further increases of the efficiency of utilizing fuel and energy resources in maritime transport depends upon an expansion and acceleration of the modernization work on ships to reequip their fuel preparation systems to allow operation of the diesel plants on high-viscosity, heavy, and superheavy fuels. The urgency and importance of these efforts is dictated by the expected deterioration in the quality of petroleum fuels.

The utilization of such fuels in diesels is possible only if ships are fitted out with fundamentally new systems for fuel preparation having jet warm-up in tanks, chemical treatment, homogenization, and complete clarification of the fuel. Along with the modernization work for the change-over to operate the main engines on heavier fuel, it is necessary to prepare for the operation of the auxiliary diesels on high-viscosity fuels or on mixtures of them with low-viscosity (diesel) fuels.

The improvement of the structure of the fuel and energy status of maritime transportation, which assures a decrease in specific fuel costs in fleet operations, is being achieved not only by selecting more economical fuels for ships, but also by economies in their consumption.

The engineering solutions directed toward economy in the consumption of fuel and energy resources in maritime transport can be consolidated in the following three groups:

- Reducing the specific fuel consumption of electrical generating plants. (By improving the plants' thermal process, improving the processes of preparing fuel for combustion, by the use of water and fuel emulsions, and by improving methods of utilizing waste heat and waste oil.)

- Reducing the energy consumption of equipment. (By improving the systems that use fuel and electrical energy, and by decreasing the energy consumption due to hydraulic losses in general shipboard piping systems.)

-Reducing the consumption of fuel and energy resources by optimization of the transportation process. (By bestokovaya [sic, currentless ?] cleaning and painting of hulls, and the selection of ship speeds, loading and the disposition of cargoes on the basis of an analysis of operating conditions.)

The work on the conservation of fuel and energy resources in maritime transport is being carried on constantly by the introduction of engineering solutions into the practices of the industrial sector. The realization of these solutions is being accomplished in the construction of the ships and in their operation. The carrying out of modernization work on the ships of the operating fleet is a necessary condition for establishing progressive fuel consumption standards for each ship.

The depth of the oil refining going on at present is leading to change in the physical and chemical indices of the petroleum products from which fuels are made up. In this connection, a change is expected in the composition and operational properties of the fuels used in maritime transport. A deterioration of the quality of petroleum fuel will take place in the direction of increased density (up to 1.05), increased sulphur content (up to 5 percent), increased viscosity, and elevated temperatures of solidification. These fuels are being prepared from the products of break-down oil refining processes (the processes of slow carbonization, catalytic and thermal cracking).

These prospective petroleum fuels for shipboard power plants are bound to replace the commercial grades of fuel being used at present. Instead of 12 grades of fuel recommended for use on ships as at present, it is envisaged that only 3 will be used; namely, low-viscosity fuel and two grades of high-viscosity fuels.

Along with the problems in the selection of the kinds of fuel that are most economical and technologically effective in manufacture and the problems of their efficient utilization, at present work is being intensified on the replacement of petroleum fuels with new combustible materials because of the limitedness of the reserves of oil.

Synthetic liquid fuels made from coal or oil shale, and also natural gas in liquified form are being considered as alternative fuels.

The most promising substitutes for petroleum fuels in diesel, gas turbine, and boiler plants are synthetic liquid fuels from coal or oil shale. The operational properties of such fuels are near to those of petroleum fuels and therefore their use on ships of the maritime fleet will not cause difficulties.

Liquified natural gas can find only limited use on those ships whose operating conditions provide the possibility of frequent fueling (loading natural gas). For cargo ships transporting freight on international lines, the use of liquified gas would entail losses in the ship's carrying capability and difficulties in refuelling in foreign ports. For these reasons, the use of liquified natural gas on cargo ships in the near future is not promising.

The problem of decreasing the demand for petroleum fuels can be solved by the partial replacement of them by methanol or ethanol which, in mixtures with petroleum fuels (in the ratio of 40 to 60) form stable emulsions. The use of such emulsified methanol-petroleum or ethanol-petroleum fuels can be considered as a possible direction for an efficient use of fuel and energy resources. But the replacement of petroleum fuels with synthetic liquids made from coal, the industrial manufacture of which is expected beginning in 1990, should be considered the most promising.

A practicable direction for reducing the demand for petroleum fuels at present is an expansion of the use of nuclear fuel. Its use on nuclear powered ships is most promising.

By the year 2000, the widespread use in maritime transport of new combustible materials instead of petroleum fuels is expected. In the opinion of an expert, the proportion of new fuel materials in the fuel and energy supply of the sector will amount to about 65 percent. In view of the elevated prices for petroleum fuels envisaged in the next few years, the replacement of the latter with new fuels is economically justified.

So, the most important problem in maritime transport at present is preparing the fleet to use new fuels. At the same time, depending on the kind of fuel used, there is an urgent problem in economizing on consumption. Comprehensive engineering solutions for the selection of economic kinds of fuel and energy resources and economizing on their consumption will permit a further reduction of the specific fuel costs in maritime transport and so reduce the cost of carrying freight.

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MARITIME AND RIVER FLEETS

HISTORY OF KAZBEK-CLASS TANKERS

Moscow MORSKOY FLOT in Russian No 1, Jan 84 pp 36-37

[Article by V. Basevich: "The History of the 'Kazbeks'"]

[Text] The Great Fatherland War had ended. Our country's tanker fleet had sustained great losses - "Apsheron", "Valerian", "Kuybyshev", "Varlaam Avanesov", "Donbass", "Mikhail Gromov", "Emba" The cities and villages were being restored from ruins. Diesel fuel, kerosene, benzene, and lubricating oil were required for industry, agriculture, and transportation. Foreign trade was being developed and the export of petroleum products was being increased. But tankers were not available.

In the second half of 1945 a decision to build tankers was adopted. On September 20th 1950, at the Black Sea Shipyard in Nikolayev which now has been decorated with orders four times, the keel of the first postwar tanker, the "Kazbek", was laid. On September 17th of the following year, a commission of the Ministry of the Maritime Fleet accepted the ship from the builders.

In Black Sea ports the "Kazbek" was received with interest and pride. In those times this was a large ship. It had an 11,800-ton deadweight, a speed of 12.8 knots, and a 145.5-meter length. The tanker was for the transport of two kinds of petroleum products. In its construction, the large-unit method of building was used for the first time. It permits reducing the time a ship stays on the building ways and increases the productivity of labor.

For more than ten years P. Kriventsov commanded the "Kazbek". From the very first day of his arrival on board he was the life and soul of the crew and the initiator of a Stakhonovite movement. The seamen decided the new tanker would be operated in a new fashion. Soon the "Kazbek" became known not only as the first ship of a new series, but also as the leading ship of the maritime fleet. More than once the tanker's personnel won the championship in the socialist competition.

On September 3rd 1953, a second one-design tanker, the "Volgodon", went into service. It differed from its predecessor in that two domestic 8DR-43/61 diesels were installed in it. Also at this time, the Kherson Shipyard (the youngest shipyard in the country) completed its first ship which was built to the same design and named "Kherson" in honor of its birthplace. On it on

December 2nd 1953, the red flag of the Country of the Soviets was raised. The shipbuilders of the Admiralty Shipyard in Leningrad also labored over the building of "Kazbek-class" tankers. Their first tanker became the "Leningrad". The "Moskal'vo", built in 1961 by the Khersonites, completed the series.

Thus, for the first time in Soviet domestic shipbuilding, over a relatively short period, a series of seagoing tankers was built of which 60 entered into the composition of the fleet of the Black Sea Steamship Company. They not only restored the losses from the tanker fleet in the Great Fatherland War, but exceeded the prewar tonnage of the former Sovtanker Steamship Company by a factor of almost three. These ships played a decisive role in the postwar restoration period as the principal component of the domestic tanker fleet.

The paths of the "Kazbek" tankers ran across the seas and oceans of the planet and into the ports of five continents. They were seen in Montevideo and Havana, Naples and London, Hamburg and Oslo..... Despite the classification of the Register of Shipping authorizing their navigation only in the ice of southern basins, the "Kazbeks" also sailed in Arctic seas. They delivered petroleum products for the Noril'sk Mining and Metallurgical Combine and other developing constructions in the Extreme North. They also supplied the ships of the whaling fleet in the Antarctic. Petroleum products, vegetable oils, animal fats, alcohol, beans and wheat were carried on these tankers.

When, in 1960, there was a need to deliver liquified ammonia to Cuba, the tankers "Vladimir", "Groznyy", and "Frunze" were converted for this purpose. Twenty one tanks were installed on the deck of each of them. The tanker "Vladimir" was awarded the Order of Lenin for conscientious work and mastery of the transport of gas products. The president of the Society of Soviet and Cuban Friendship and first Cosmonaut of the planet, Yuri Gagarin was the first to congratulate the crew for their work worthy of communists and for their high award.

"They are good 'sailors'" says V. Starostin about the tankers. He is the deputy chief of the V/O [All-Union Association] Morskhsudoremprom [Maritime Technical Ship Repair Industry ?] with whom I recently met. "More than once we ran into force 10 or 11 storms. The tankers weathered it."

After completing the Odessa Higher Marine Engineering School, for about ten years Starostin sailed on "Kazbek" tankers. He began his maritime work as the fourth engineer on the tanker "Kherson". Then there were five years on the "Ashkabad". In 1959 Viktor Mikhailovich became the chief engineer on the "Yegor'yevsk". Since 1967 he has been working at the Ministry of the Maritime Fleet. He looks after the construction of modern ships and, of course, tankers.

"They are strong ships" Starostin continued about the "Kazbeks". "And what is very important, they became good schools for seamen. On those motorships the whole group of tankerists grew up. Today several of them have become

the leading specialists of the fleet. For instance, A. Kazimov, in the past captain of the tanker "Petr Shirshov", at present is chief of Glavflot [The Main Administration for Transportation, the Operation of the Fleet and Ports] of the Ministry of the Maritime Fleet. Yu. Vakhromeyev, a Laureate of the USSR State Prize in 1983, and P. Nechitaylenko, a former chief engineer on "Kazbeks", are now the chiefs of the services of ship availability and readiness of the Black Sea and Novorossiysk Steamship Companies. Many became the tutors of captains and engineers. There are more than ten of them in the Novorossiysk Steamship Company alone."

Years pass. The tankers are sent into well deserved rest. But, far from the great ocean routes, they continue to toil in accordance with their strength and capabilities. Some became petroleum product storages and others spend restless days in the composition of the auxiliary fleet.

For ten years the honorable veteran, the "Kazbek", was used as a storage for diesel fuel in the port of Ventspils. Recently the motorship "Rava-Russkaya" replaced it. The floating washing and purifying station, MOS-2, was fitted out on the hull of the tanker "Kursk". It receives and purifies oil and water mixtures from ships and washes cargo holds, fuel and lube oil tanks. The tanker "Leningrad" became the unique environmental protection system, the "Svetlomor", which is capable of collecting an oil spill in the sea. The "Ashkabad" was turned into the training ship and laboratory "Kursant".

Despite extreme age, many of the "Kazbeks" are still in service. These veteran ships, with pride, pass by their giant younger brothers which have been built in our day.

The "Kazbek-class" tankers have occupied a distinguished place in the annals of the Soviet Maritime Fleet.

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INTERSECTOR NETWORK DEVELOPMENT

ADVANTAGES OF CONTAINER TRANSPORT SYSTEM REVIEWED

Moscow AVTOMOBIL'NYY TRANSPORT in Russian No 10, Oct 83 pp 18-19

[Article by I. Batishchev and K. Bogunov, Motor Transport Scientific Research Institute; and V. Konoplin, RSFSR Ministry of Motor Transport: "The Formation of a Container Transport System"]

[Text] The great efficiency of container and package methods in freight shipping is the reason for their intensive development and broad introduction in all forms of transport in this country, as well as abroad. Shipping of this nature is especially efficient when freight is being carried by different forms of transport along one route (for example, motor-rail routes, motor-water-rail routes, and so forth). The increased efficiency is due to the elimination of manual labor from numerous freight handling operations; the delivery time is reduced, and there is a smaller demand for covered storage facilities. Experience shows that container and package shipping also has considerable advantages over traditional freight delivery methods that involve direct service, when goods are not transferred onto some other form of transport.

Over the past 10-12 years container and package shipping on motor transport has undergone considerable development. For example, the total volume of container and package shipments carried out in the system of the RSFSR Ministry of Motor Transport increased by a factor of over 2.5 compared to 1970, and in 1982 these shipments totalled 124 million tons. Container shipping on direct motor transport routes has been developing at a very rapid rate (the volume of these shipments has increased by a factor of almost 20 and has exceeded 32 million tons), as have shipments using packages with and without pallets (the volume of these shipments has increased by a factor of 4.5 and has reached 60.6 million tons).

The RSFSR Ministry of Motor Transport has done a great deal of work in recent years to promote the mass introduction of container and package shipping on direct motor transport routes. The Motor Transport Scientific Research Institute and the Central Planning, Design, and Technological Bureau have developed a range of technical equipment (motor vehicles, trailer trucks to carry containers and packages, crane-type self-loading vehicles and self-loading vehicles with hoisting boards, various types of all-purpose and specialized containers and pallets, hoisting mechanisms and units, etc.); and series production of this equipment has already been set up at the ministry's plants.

Today the ministry's motor transport enterprises have more than 53,000 of their own containers, a large number of container-carrying trailer trucks, self-loading vehicles (with cantilever and portal cranes, and with hoisting boards), and other technical equipment that is used in container and package shipping. More than 150 container lots were built and equipped with contemporary loading machinery to organize container shipping on direct motor transport routes.

The set of technical equipment for container and package shipping and the required normative and technical specifications, developed by the Motor Transport Scientific Research Institute and approved by the ministry and other higher organizations (regulations, conditions, management, instructions, tariffs, model industrial processes, etc.) are the foundation for the formation of a container transport system in general-use motor transport. Several transport administrations (the Volga-Vyatsk Industrial Transport Administration, the Central Volga Transport Administration, and others) have already started working on forming a regional container transport system (on an oblast-wide scale) that will provide a sharp rise in the volume of freight shipped by container and an improvement in the quality of services provided to customers.

The Volga-Vyatsk Industrial Transport Administration alone, where the specialized "Gor'kiyavtotranskontayner" [Gorkiy Motor Transport Container] Enterprise has been formed, which has at its disposal a pool of about 2400 containers of various types, and the required amount of specialized transport equipment (container-carrying trailer trucks) and means for mechanized loading and unloading operations (automated cranes, automated loaders, self-loading vehicles, etc.), has managed in a short period of time to reach an annual volume of 2 million tons of freight shipped in containers on direct motor transport routes. There is a large container depot (or lot) in operation in the oblast center, which with the help of an electronic computer, regulates the transport administration's container fleet that is used within the city and within the oblast. Large enterprises in Gorkiy Oblast have container exchange depots that are equipped with loading and unloading machinery and communications facilities.

Similar container transport systems are being created by several other transport administrations under the ministry. The experience of motor transport enterprises in the city of Sverdlovsk is of particular interest: they have been using their own fleet of containers and their own transportation equipment that are fitted with systems for mechanization of materials handling operations.

For shipping various types of cargo, Sverdlovsk Trucking Production Association No 3 makes extensive use of its own containers that have a gross weight between 0.5 and 5 tons, and of self-loading vehicles with crane-type loaders and with hoisting boards. This has made it possible to increase the efficiency of commercial freight shipping significantly; as a result, not only the motor transport enterprise, but also its customers, obtained an economic effect.

For example, 6 vehicles were used every day to ship confectionary articles from Factory No 1 before containers were put into use. Only 3 vehicles were required after the container system was put into operation. Trucking Production Association No 3 obtained an additional profit of more than 3100 rubles per year; and the confectionary factory saved 5800 rubles by reducing the fines it paid for excessive vehicle layovers.

The use of containers with a gross weight between 3 and 5 tons in shipping from the depot of the RSFSR Office for Wholesale Trade in Household Goods in Sverdlovsk made it possible to centralize shipping of this type of freight not only within the city, but also in delivering goods to nearby towns in the oblast; it also became possible to use large-capacity vehicles and KamAZ [Kama Motor Vehicle Plant] trailer trucks for these purposes.

The KI-238M temperature-controlled containers that have a gross weight of 0.5 tons and are equipped with casters are being used with the ZIL [Moscow Motor Vehicle Plant imeni I. A. Likhachev] and GAZ [Gorkiy Motor Vehicle Plant] self-loading trucks with the 4030P crane to ship sausage products from the meat combine. The introduction of containers and self-loading vehicles here has made it possible to reduce the demand for motor vehicles from 28 to 10-12 units, that is, to two-fifths the previous level.

Packaged fruits and vegetables are shipped from depots of the RSFSR Office for Wholesale Fruit and Vegetable Trade to stores in the city of Sverdlovsk in lattice-type containers with casters and a gross weight of 0.3 tons (model PShT-1) using a fleet of 10 vans with hoisting boards. Before the container system was introduced, 23 vehicles were needed to ship the fruit and vegetables. More than 30 vegetable stores have been specially re-equipped to handle directly fruit and vegetables delivered in containers; the possibility of moving the containers on casters right into the commercial area of the store was provided for.

Recently container shipping of various types of commercial cargo has been developed at the Lower Volga Industrial Transport Administration, both in its city and oblast intercity routes. The experience of the "Volgogradtorgtrans" [Volgograd Commercial Transport] Production Association is of particular interest; it has created in its operation department a group for coordinating the work of different dispatch centers that are located at the association's container lot, at the depots of the Office for Wholesale Trade in Household Goods; the Office for Wholesale Trade in Haberdashery, Perfume and Cosmetic Articles, and Soap; the Office for Wholesale Trade in Textile Goods; the Office for Wholesale Trade in Footwear; and the Office for Wholesale Trade in Clothing (all these offices are under the RSFSR Ministry of Trade), and at other depots in the oblast. Container exchange centers (lots) have been created at these depots and at several enterprises to provide rapid loading operations, which speeds up the turnover of containers.

With the aim of making further improvements in container shipping from the major wholesale trade depots, the Lower Volga Industrial Transport Administration created a central dispatch center to regulate the use of containers and other transport equipment at these depots. The creation of a central dispatch center made it possible to increase the turnover of containers

at wholesale depots by a factor of more than 2 and to make a significant increase in the volume of container shipments (up to 85,000 tons per year). Meanwhile the layover time of motor vehicles for loading and unloading operations at wholesale depots was reduced on the average to one-half of the previous time.

These examples provide evidence of the high degree of efficiency involved in introducing container shipping on direct motor transport service, if this shipping is carried out by specialized self-loading vehicles that provide mechanized self-loading and unloading of containers both at the point of origin and at the destination point.

If container and package shipping in motor transport is to be developed and improved, it is necessary in the next few years to create at each transport administration a regional (oblast) container transport system that will operate in cooperation with the container transport system used by other forms of transport and that plays an integral role in that system.

The primary goals of a regional container transport system are:

--to provide complete loading and unloading of empty and full containers and packaged cargo from railroad stations, maritime and river ports and piers, as well as from airports;

--to provide a significant increase in the volume of container and package shipments on direct motor transport service in cities, rayons and in the oblast, using the system's own, and the cargo owners' containers, pallets, and equipment for mechanized loading and unloading operations;

--to switch short-run container and package shipment from rail transport to motor transport;

--to develop container and package shipping on inter-oblast and inter-republic routes (taking into account the economic expediency of this step and total cooperation with a system for organizing inter-city shipping of all freight on routes of this type).

The formation of regional container transport systems in all areas, that are united in a common container transport system for the particular sector, will require that each oblast center and large industrial town have specialized motor transport enterprises or production associations that have at their disposal a large fleet of containers, means for mechanized loading and unloading operations, and vehicles for carrying containers and packaged freight both on direct and combined transport routes. It would also be appropriate to create an extensive network of specialized container centers, container lots at all motor transport freight stations, container exchange centers at large enterprises, wholesale trade depots and supply centers, and at storage and distribution warehouses. For practical planning and management of container and package shipping, the ministry's existing network of joint computer centers must be utilized, and new electronic computers must be put into operation, taking into account the subsequent creation of the subsystem "Automated Control System--Container."

The existence of this complex of technical means for the container transport system, combined with the means available directly at the freight owners' premises, will make it possible to provide a significant increase in the volume of container and package shipping on general-use motor transport. For example, the volume of container shipments on direct motor transport service in the system of the RSFSR Ministry of Motor Transport alone can be increased to 48,000-50,000 tons, which is greater than the volume of container shipments on the country's railroads.

Taking into account the realistically planned delivery of technical equipment for the container transport system, the volume of container shipments on direct motor transport service should increase substantially by 1990.

In 1990 the republic's general-use motor transport (not including the Moscow Main Motor Transport Administration) will be responsible for all the container shipping to and from railroad stations and maritime and river ports.

There are also plans to develop a container transport system for motor transport in other Union republics. The rate of development of container and package shipping in the majority of republics will be slower than in the RSFSR, however.

The creation of a container transport system will result in a significant economic effect not only for the shipping organizations, but also for the freight owners. Therefore, it is in the interest of the freight shippers and consignees to contribute to the further development of the container transport system, and to provide the technical means and industrial processes needed for container and package transport.

Agencies involved in the management of general-use motor transport should work to determine the amount of freight shipped that is suitable for container and package transport; and in conjunction with the ministries and departments concerned, they should develop and carry out measures to create container transport systems in all regions of the country.

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INTERSECTOR NETWORK DEVELOPMENT

AEROFLOT'S SERVICES GREATLY VALUED BY SOVIET FISHING FLEETS

Moscow VOZDUSHNYY TRANSPORT in Russian 11 Feb 84 p 4

[Article: "Meetings in the Ocean" with subtitle: "Aeroflot Assists More Effective Utilization of Oceangoing Fishing Ships" under the heading: "The One Hundred and One Functions of a Pilot".]

[Text] Our correspondent talks with Yu. Yakovlev, the director of the office for the between-voyage servicing of ships in foreign ports of the All-Union Association Sovrybfot [Soviet Fishing Fleet] of the USSR Ministry of the Fishing Industry.

Question: "Yuriy Nikolayevich, the business collaboration of aviators and fishermen has a long tradition. Back in 1926 in our country an aircraft was used in a hunt for fish and marine animals for the first time. Nowadays pilots or flying observers do spotting work for fishing ships. But the scale of fishing is growing and with it a partnership of our industrial sectors is developing. Fishermen are being transported by aircraft more and more widely to the localities of ocean fisheries. What effect does this have on the country's national economy?"

Answer: "Our trawlers, drifters, seiners, and fish factory ships are going farther out into the world's oceans. In addition to the traditional fishing grounds, they are exploiting new areas of the blue seas extremely far from native shores. Let us say that the passage of a ship from the western shores of Africa to our ports takes from 20 to 22 days. Yet our fishermen are working in even more remote regions. Imagine how much time would be lost if fishing ships returned to their ports of registry every time they needed repairs or to relieve the crews. We are therefore steadily broadening the practice of repairing ships in foreign ports. In this, Aeroflot's assistance is priceless. Its airliners now deliver exchange and repair crews to scores of ports in Africa, Asia, and America.

The principal crews are returned home for rest by aircraft. Lima in Peru, Luanda in Angola, Dakar in Senegal, Maputo in Mozambique, St. John's in Canada, Casablanca in Morocco, and Havana in Cuba are some of the places where fishermen of the Azov and Black Seas, Western, Northern, and Far East basins are flying.

Annually we are transporting about 135,000 fishermen and repairmen by Aeroflot's international airliners. About 80,000 more of them are being delivered along domestic air routes.

Speaking about the economic effect of such transport, I will give some specific figures. Over the past year, the use of Soviet civil aviation aircraft permitted us to save 32,000 ship-days of working time. It is as if we had acquired the capacity of a supplementary fishing flotilla. This is the contribution of Aeroflot to the development of the fishing industry and to the fulfillment of the Food Program. Add to this the huge amount of fuel which we saved by eliminating inefficient ship passages."

Question: "That is, for you, Aeroflot is a reliable partner and assistant..?"

Answer: "Yes, that is so. We have been using its services in the transport of fishermen for 15 years and all of that time there has been complete mutual understanding between us. The Central Administration for International Air Service not only grants us seats on scheduled flights, but also, in accordance with our requests, arranges supplementary flights. For instance, we have three to four supplementary flights to Lima in a month.

The fishermen are a special category of passengers. They are returning after a difficult six months on duty, and they are especially appreciative of the care and attention with which they are surrounded immediately after boarding the aircraft and in the airports."

Question: "And what, Yury Nikolayevich, are the prospects for future collaboration of the aviators and the workers of the ocean fishing fleet?"

Answer: "First of all there is a continued increase in the scale of the transportation. In the near future we plan to send fishermen by air to ports in Argentina, Brazil, and Portugal. Also we would like to prolong the time our crews can stay in their family circles. It would be desirable to arrange for the arrival and departure of fishermen not only through Sheremetevskiy airport, but also through other airports nearer to the bases of the ships.

Aeroflot already has met us halfway on this, and we are sending part of our crews to distant shores from Simferopol. I think it may also be possible to use the airport in Riga. And of course, together with the airline, we will improve the service to fishermen in flight.

In conclusion, through the newspaper VOZDUSHNYY TRANSPORT, I would like, on behalf of the many thousands of detachments of Soviet fishermen, to congratulate the civil aviation workers on their vocational holiday - The Day of Aeroflot. We wish them constantly clear skies and new successes in their difficult but so necessary work.

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EXPERIMENTAL SYSTEMS

ROBOTIC MINI-AIRPLANE DRONE FOR CROP DUSTING

Moscow GUDOK in Russian 5 Mar 84 p 4

[Article by S. Mikhaylov: "A Robot Goes Off Into the Sky"]

[Text] The plane went by hedgehopping—some 3 meters off the ground. Taking only a moment to cover the field, which is 1.5 km long, it zoomed up over the protective forest belt, it made a turn, aimed a bit to the left, dropped down once again, and took up its course in the opposite direction. One could see with the binoculars that the plane was bombing the field: every half second it dropped with extreme accuracy bombs of ... paper. To be sure, the lethal cargo was only for the pests of farm crops.

This was in the Kuban region, on the Kolkhoz imeni XXII S"yezd KPSS, where the biologists had called for help from the aeronautical experts.

It is nearly half a century now since the scientists began to use trichogramma in controlling crop pests. There was good reason for this. Half a kilogram of the substance can protect a hectare of crops. And as is generally the case in nature, so here: when the number of pests reached a minimum, their enemies almost disappeared: an "explosion" occurred in reproduction of harmful insects, and there was also an "explosion" in reproduction of trichogramma. And all this took was half a kilogram per hectare. But how are they to be settled all over the field? You can't, say, drive a tractor through a corn field when the plants have reached the height of a man. Using an An-2 aircraft is about like shooting sparrows with a rifle. What sense does it make to load a few kilograms of payload on an "Annushka" [An-2 plane]? Or should it be scattered by hand? But where can one recruit the personnel for the field work season on the farm?

In this situation scientists of the All-Union Scientific Research Institute of Biological Methods of Plant Pest and Disease Control turn to the student design office of the Moscow Aviation Institute. The young aeronautical experts were asked the question: Is it possible to create an aircraft for placement of the trichogramma? "Yes, it is," they replied. "This must be a small-size remote-controlled (unmanned) aircraft." But what kind? Airplane or helicopter? What should its dimensions be? How should it be guided? At that point no one knew.

Thousands of hours went into reflections, sketches, calculations, blueprints and models before several prototypes of radio-controlled aircraft emerged. A monoplane airplane with a piston engine, a 2-meter wing span and take-off weight of 6 kg, able to treat 110 hectares of crops per hour, was found to be the optimum.

The plane is operated by two people: the pilot-operator and the signaler, located at the other end of the field. He moves along the edge of the field. The operator guides the plane toward him as toward a beacon. He radios commands for climb or descent depending on the relief of the terrain, for turns, and he "calls" it to himself. He "pilots" the plane from controls on his chest. In the experiment the baby plane was piloted by amateurs experienced in guiding model airplanes. The question naturally arose: When these planes begin to be manufactured in series, where will the pilots be found? They do not exist on the staffs of rayon stations for biological plant pest and disease control, and there is nowhere to go to learn this job.

There was one way out of this situation--the remote-controlled plane had to be self-piloted. It had to operate according to a given program; in other words, it had to become a sky robot. And an artificial horizon--an instrument to stabilize horizontal flight--appeared on board the test invention. They installed a guidance system on the airplane, and they equipped the signaler with a photoflash lamp toward which the airplane sets its course. The guidance system does not take notice of the sun or random bright flashes; it reacts only to a flash signal of a particular frequency. They also equipped the plane with a device for setting the altitude: it performs this function by accurately imitating the relief of the terrain.

In Krasnodar Kray the "sky robot" has been operating under actual production conditions. The nastiest weather conditions have not interfered with it. It was grounded only by gusty squall winds. It has been treating as much as 600 hectares of crops per shift.

Placing the trichogramma with the An-2 costs 80 kopecks per hectare, and it costs 40 when it is done by hand, while the costs using the robot airplane do not exceed 6 kopecks. That is the contribution of its creators to carrying out the Food Program.

The plane may also be used in other fields of science and production. It can be used for aerial photography or taking air samples to determine the purity of the atmosphere.

Series production of the miniairplane is within the power of any enterprise.

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